The Builder.

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A Gleam across the Storm of the Eleventh of May.

IN that common and easy philosophy of daily life, which, though it may repose to a certain extent on the broad basis of common sense, is certainly not founded on the data of exact science, it is held as a maxim that storms purify the air. In some places, and at some seasons, this certainly appears to be the case. In that bright little sub-Alpine city which has lately ceased to be the metropolis of the new kingdom of Italy, the heat of the sun in the summer often attains a thermometric intensity equal to that of the semi-African climate of Southern Italy. But as the thermometer rises, and the oppressive state of the atmosphere begins to cloud the brain, a dark canopy is seen to form over the Alps, and a violent and refreshing thunderstorm lays under water for some half-hour the clean-swept streets of the tidy little city, and human life and action start into fresh energy. In our own more irregular climate, we have often felt the refreshing effects of a shower. But we are hardly justified in the optimism that would attribute to the benignant action of nature tempests such as that which in the past winter strewed our coasts with wreck, and uprooted our noblest forest trees. We are rather inclined to look at the dull, close, unwholesome weather which is sometimes the prelude of a storm, as a climatic disturbance quite as unnecessary as the storm itself, and to think that March winds and April showers are most welcome when most gentle.

The storm,—not indeed of wind and rain, but of panic and confusion,—that burst on the city of London on the 10th and 11th of this month, was one almost without precedent in its violence, and perhaps altogether without precedent in the rapidity with which it burst upon our heads. The scene presented by Lombard-street would not have been more confused if a foreign army had landed on our shores. Old men spoke of the panic of 1825, and those whose acquaintance with such events was formed from reading rather than from experience, thought of the South Sea Bubble, and the failure of Law's Bank in Paris, during the regency of the Duke of Orleans. Merchants and bankers met to call on Government to suspend the law which makes the note of the Bank of England, with a certain limitation, an actual deposit note, representing so much bullion stored in the cellars of that establishment, and that makes the well-known paper the *bonâ fide* representative, not of credit, but of cash. Ministers left the House of Commons to deliberate on the urgency of the case; and when at midnight the Chancellor of the Exchequer announced that he had written to authorise the directors of the Bank of England to issue notes at their discretion, the cheers of the House testified to a sense of relief from the fear of still impending calamity.

The panic, sudden and violent as was its crisis, was not unforeseen. In our columns of the 21st of April last, we called attention to the consequences of what have been called of late financial operations. Borrowing may be a great convenience, but like all conveniences it has its limit; and when you borrow of some one who has to borrow of some one else in order to lend to you, that limit is very sharply defined. The limit in question is this, that you must be sure of having your loan returned before you can be called upon to pay that which you have yourself contracted. In other words, you must lend for a shorter time than the time for which you borrow. This is the principle of all sound banking, and a discount business conducted upon this rule is as safe as it is profitable. In the case of the establishments the embarrassments of which have caused the panic, this principle has been reversed. The money of depositors has been taken, subject to return at short notice, and has been invested in speculations, perhaps very good in themselves, and promising a very large return, but absolutely unsaleable on an emergency. Such a mode of conducting business is certain to produce disaster if credit is once shaken, and with just so much alarm as shall stop the daily deposit of loose cash in the ready hands of the financial banker, down comes the whole circle with a crash, and alas! for the Saturday night at many a pay-table.

Without underestimating the loss involved by such a convulsion as that which will be long memorable in our annals, or the suffering which will in consequence be undergone by so many persons entirely innocent of any blame or imprudence in the matter, we yet see room for consolation in some of the effects of the storm. People will learn, perhaps for a generation, at all events for a decade, that great profits mean great risks. Why should English stock, paying 3 per cent., be worth 85 to 90, and Italian stock, paying 5 per cent., be at 50? Does it not mean that in the public opinion the safety of the English stock is just three to one as compared with that of the Italian debt? What is the other side of the 30 per cent. dividend that you have just gaily brought home from the meeting of some "limited" company, to which you have had the good fortune to subscribe? Is it not the fact, which you may learn unexpectedly from the newspaper on your breakfast-table, that you have invested your earnings in an enterprise in which the chances are 10 to 1 that they will be swallowed up. Sound business is not affected, except incidentally, by a convulsion arising from a reversal of the true law of credit even by dealing with that delicate instrument to the amount of millions.

One incident of the panic deserves record, to the honour of all concerned. It is said that when one of those great employers of labour, the suspension of whose large operations is one of the most universally regretted events of the crisis, was first known to be in jeopardy, a brother contractor,—whose name may be readily surmised, for it has become throughout Europe a household word for probity and straightforward conduct, as well as for enterprise and energy,—called on him, accompanied by three other members of the same calling. The first had in his pocket two hundred thousand pounds, the other three one hundred thousand each. The half million was freely placed at the disposal of the tottering firm, on the condition that its use would be sufficient to ensure its stability, and with a frankness and courage as honourable as was the generosity of the offer, was at once declined. If this account be true, and it is stated on no slight authority, it is hard to say to which party it does most credit—to those who, on so noble a scale, did as they would be done by, or to those who could decline assistance to such a gigantic amount, lest it should not be fully adequate to supply the wants of credit arrangements suddenly and violently overthrown. Honour to the builders of England who contain in their ranks men capable of such an offer, and of such a refusal! Amid all the confusion and general selfishness of a financial panic, an incident such as this shines like a glint of sunshine through the storm.

THE AGE AND AUTHENTICITY OF THE NATIONAL PORTRAITS TESTED BY COSTUME AND HERALDRY.*

BEFORE entering the eastern gallery, I have to state that I have been fortunate enough to identify the arms on the left panel or wing of the altar-piece (No. 27), above the figure of the pilgrim supposed to represent Humphrey Plantagenet, Duke of Gloucester, and that a curious question of interest is raised by them. The arms on the dexter side of the shield are those of Sir Robert Tate, Sheriff of London, 21st of Edward IV., 1481, and Mayor 4th Henry VII., 1488; and on the sinister side are the arms of his wife Margaret, daughter of — Wood, of Warwick. Her will is in the Prerogative Office, London, dated 1512. Now, Sir Robert was the son of Thomas Tate, of Calais, merchant of the staple, living 11th Edward IV., 1471, younger brother of Sir John Tate, Sheriff of London, 4th Edward IV., 1465, and Mayor 13th Edward IV., 1473. Besides the impalement of the arms of Wood, the identification is confirmed by the crescent in the arms of Tate, being the difference for a second son.

Sir John and his brother Thomas, of Calais, were the sons of John Tate, of Coventry, living *temp.* Henry V., and both must have been contemporaries of the good Duke Humphrey. Sir Robert Tate, to whom that portion of the altar-piece at all events belonged, and for whom it might have been painted, could hardly have seen the Duke, who was murdered in 1446; but the family might have been under obligations to him, and the picture painted in Calais by a Flemish artist in commemoration of their benefactor. The facts are certainly in favour of the traditionary account of the portrait. The other personage over whom is placed the coat of arms is probably Thomas Tate.

REIGN OF HENRY VII.

On entering the eastern gallery, and commencing with the reign of King Henry VII., we begin to feel ourselves on rather surer ground. It will be no longer necessary for me to speak of every portrait, as I felt compelled to do in the "Plantagenet Series." I shall now only notice such as are interesting from their costume, or are of doubtful character as to time or person.

No. 41 is the portrait of Sir Robert Chester, who was born in 1510, knighted in 1552 by Edward VI., and died in 1574. The portrait is dated 1562, he being then in the fifty-third year of his age. Although his father helped Henry VII. to his throne, I humbly suggest that this portrait of a man born in the reign of Henry VIII., and painted in the reign of Queen Elizabeth is, for the purposes both of art and education, hung a little prematurely, preceding, as he immediately does, No. 42, Thomas Stanley, first Earl of Derby, who died in 1504, six years before Sir Robert Chester was born. But, query, *is* this Sir Thomas Stanley, *the* Lord Stanley who turned the battle of Bosworth Field into a victory for Henry VII.? He certainly never were the costume he is painted in. Even the cautious compilers of the catalogue have been compelled to observe that the costume is "temp. Henry VIII.;" temp. Philip and Mary would have been nearer the date, I suspect. We have (No. 69) his son, Lord Strange, the George Stanley who so narrowly escaped the vengeance of Richard, and died in the lifetime of his father, 13 Henry VII., A.D. 1498; and (No. 70) his grandson Thomas, second Earl of Derby, in the same style of dress; and there is a very significant hint in the catalogue, "see No. 136," said number being a portrait of "Thomas Radclyffe, Earl of Sussex, K.G.," born 1526, and deceased 1583. There are several other portraits of the time of Mary and Elizabeth that the visitor may compare these three Stanleys with, particularly one said to be of William Paulet, first Marquis of

* See page 320, *ante*.

Winchester, so created by Edward VI., and who died the 10th of March, 1572. With every wish to look in the most favourable light on the ancestors of the noble earl to whom we are indebted for the existence of this very interesting exhibition, I must doubt the true appropriation of the above portraits to the personages designated.

Nos. 43, 51, 57, three portraits of Elizabeth of York, queen of Henry VII. All poor copies I suspect, of some earlier painting, but not to be relied on. No. 51, rather different in its details, and the "white rose" is omitted.

No. 45, John Mowbray, Duke of Norfolk, K.G., killed at Bosworth, 1485. The fact of "the name and circumstance of his death and the doggerel rhyme about Jockey of Norfolk," being inscribed on the picture, flings a suspicion upon it, which would not have been raised by the costume. The writing, however, might have been an addition after his death, and the picture is hung too high for critical inspection.

Nos. 47 and 48, two portraits of Margaret Beaufort, Countess of Richmond and Derby, mother of Henry VII. This illustrious lady is said to be represented in "the dress of a recluse according to the vow she took before her third marriage." I should rather say she was in the habit of a widow, according to her own "Ordinance," issued in the eighth year of her son's reign "for the reformatien of apparell for great estates of women in the tyme of mourninge." She wears not the wimple of a nun, but what was called a "barbe," which widows above the rank of baroness were ordered to wear "above the chin." The barbes of persons of lower degree were to be worn "below the throat-goyll," or gullet; that is, the lowest part of the throat. That which is called a diamond-shaped head-dress is the Miniver or three-cornered hood or cap, introduced towards the end of this reign. Stow tells us they were white and three-square, and the peaks fully 3 in. or 4 in. from the head; but in the time he wrote (1631), they were almost forgotten. The name of "miniver cap" arose probably from their having been originally trimmed or faced with that fur when made for persons of distinction. It is, perhaps, worth observing, that in No. 48 (Lord Derby's picture), the countess wears her wedding-ring above the knuckle of the finger; and that in No. 47 (the picture from St. Peter's College, Cambridge), no wedding-ring appears at all.

No. 49, Arthur Prince of Wales, eldest son of Henry VII., died 1502. This portrait has been identified recently by Mr. G. Scharf, it having been previously known as that of Arthur's brother, Henry, afterwards Henry VIII. He wears a family collar of red and white roses, the foundation, probably, of the collar of the Order of the Garter, which is first mentioned just after his decease. In an inventory of his brother Prince Henry's jewels, made in 1504, it is described as a collar of garters of gold, containing twenty-two garters and twenty-three laces, with a George on horseback. It does not appear to have taken its present form of roses *within* garters before the reign of Henry VIII., who reformed the statutes of the order, and altered the dress. Our information upon this and similar points is, however, at present very defective, and one of the valuable results from an exhibition of this description is the data it may furnish us with for further discovery; for example, we have here no authentic portrait of the reign of Henry VII. displaying a collar of the order of the garter, as we shall find it in the reign of Henry VIII.

Nos. 52, 55, 56, 59, 62, all portraits of King Henry VII., and none of them to be relied upon. No. 62, the gift of Lord Frederick Campbell to Christ Church, Oxford, has been distinguished, however, by connoisseurs, and certainly has a more genuine appearance about it. There are none that equal the miniature, on vellum, in the Sutherland Clarendon, which Mrs. Sutherland, the then possessor, kindly permitted me to have copied and engraved for my "History of British Costume," nor is there any peculiar character of dress or ornament in them to call for observation.

No. 54, called "Henry VII. and Ferdinand of Arragon." This erroneous description has been already corrected by the critic of the *Times*, but the absence of any warning in the catalogue causes the public much embarrassment, as I can personally attest. It would be amusing, if it were not so much to be lamented, to listen to the conversation respecting this really interesting picture, and the uncertainty in the minds of the visitors as to which of the two personages is intended to represent Henry VII., the majority being in favour of Ferdinand, as the very remarkable features of the Emperor Charles V. are not to be in any way reconciled with those of the adjoining portraits of the English sovereign. The picture, which is not by Holbein, possesses, however, great merit, and the accessories are most carefully and beautifully delineated. Charles V. wears the collar of the Golden Fleece. His brother Ferdinand, a collar of jewels of the most elaborate description, but not of any particular order that I recognise. Surely Mr. Musgrave, the proprietor of this interesting painting, would not object to the correction of so important an error in a future edition of the catalogue. An authentic portrait of the Emperor Charles V. must be sufficiently valuable.

No. 58, mis-named "Three Children of Henry VII." Mr. G. Scharf has clearly, I think, demonstrated that these are the three children of Christian II., King of Denmark, by his queen Isabella, sister of the Emperor Charles V., viz., John, born 1518; Dorothy, born 1520; and Christina, born 1523. In the latter year, this "Nero of the North" was compelled to abdicate, and landed in England, at Dover, on the 15th of June. He stayed here but twenty-two days, and then proceeded to Flanders, in which country this picture was most probably painted, and not in England, or before that period, as has been suggested, the ages of the children sufficiently proving to the contrary. The queen died at a château, near Ghent, 19th of January, 1526; a fact which Mr. Scharf has not mentioned, but which is important, as Prince John was then in the ninth year of his age, Dorothy in her seventh, and Christina in her fourth year, corresponding perfectly with the appearance of the children; and it will also be observed that they are all in black: painted, it is probable, in that year, while still in mourning, as I conceive, for their mother. John died a youth of fourteen in 1532; Dorothy married Frederick II., Elector Palatine; and Christina was first the wife of Francisco Maria Sforza, Duke of Milan, and after his death, of Francis I., Duke of Lorraine, having refused the hand of Henry VIII. on the ironical plea of possessing "only one head." The catalogue in which this picture is positively stated to represent "*The* three children of the King of Denmark," was compiled in 1542, during the life of Christian, who died in 1559, and all the other descriptions of it, or the copies from it, are as late as the eighteenth century, and do not agree with each other. The one at Hampton Court being inscribed "Henry huit^me^, Roy de la Grande Brétagne, *avec ses deux sœurs*, Marie, épouse Louis XII., Roy de France, ensuite Brandon; Margurite, épouse Jacques IIII., Roy d'Ecosse;" while the copy at Wilton House, dated 1495, makes them the portraits of Arthur Prince of Wales, his brother Henry, and his sister Margaret, and attributes the work to Hans Holbein "ye Father." The original painting in the possession of her Majesty is said to be by Jan Mabuse. I have dwelt rather longer upon this picture, as it affords a striking example of the confusion caused by such confident assertions, and the consequent necessity of the most minute critical inquiry previously to their adoption.

Nos. 61 and 63, James IV. of Scotland, killed at Flodden Field, 1513. Remarkable principally for their dissimilarity. The one attributed to Mytens, and contributed by Sir William Sterling Maxwell, appears to me the most interesting. It is stated to have belonged to Charles I.

I have already noticed No. 69, George Lord Strange, and No. 70, Thomas second Earl of Derby, in conjunction with No. 42, the Stanley of Bosworth Field. They are all three genuine portraits, I have no doubt, and of knights of the Garter, but certainly not of the persons they are attributed to; and the dress in which they are depicted being obviously that which first appears in the reign of Philip and Mary, their position amongst the nobles of Henry VII. is to be regretted. In concluding this notice I must also express my disappointment that no picture of this period, either of man or woman, exhibits the remarkable and almost fantastic fashions prevailing at the accession of Henry VII., and of which such infinite variety is to be found in the illuminated MSS. of that date. We have no warrior in the elegantly-fluted armour so well known to antiquaries; and, with the exception of the portraits of Charles V. and his brother Ferdinand, nothing magnificent in civil costume. The ladies, restricted to three (Margaret Countess of Richmond, Elizabeth of York, and the Queen of James IV. of Scotland), are depicted in fashions of quite the end of the reign of Henry VII. and existing in that of Henry VIII. I recommend the visitor who is curious on this subject to study the fine specimen of tapestry of this period, suspended facing the staircase which he descends on leaving the reign of James for that of Charles I. and the Commonwealth.

REIGN OF HENRY VIII.

It has been truly said that "English historical portraiture proper begins with Henry VIII.;" and until latterly nearly every historical portrait of that period was attributed to the pencil of Holbein. The discovery in 1862 of his will by Mr. Black, formerly of the Record Office, with the probate, showing that he died in 1543 instead of 1554, has reduced, to a great extent, the number of works assigned to him; but with this point, however important, I have nothing to do. I do not profess to criticise painting, or to pronounce on style: my sole object is, by the application of those all but infallible tests, costume and heraldry, to detect egregious misappropriation, and prevent, as far as possible, the injurious effect of erroneous impressions on the minds of the thousands of noncritical visitors for whose information, as well as entertainment, this great collection was beneficently projected.

Of the numerous portraits of Henry VIII., many of which might have been spared, two are specially deserving of notice. No. 134, a cartoon, undoubtedly by Holbein, from the Duke of Devonshire's at Hardwicke, in the noble gallery of which I saw it, at the Derby congress of the British Archæological Association in 1851, and called the special attention of the Society to it. Mr. G. Scharf, in the November of last year, by a letter to the *Athenæum* journal, pointed it out to the public at large. It is obviously the original sketch made for the artist's great mural painting at Whitehall, destroyed in the fire, January 4th, 1697-8, and of which a small copy, made by Van Ramée for King Charles II., is very properly placed next to it in the catalogue (No. 135), and hangs immediately beneath it. The portait of Henry VII. in the background was, of course, not drawn by Holbein from the life, but copied by him from an original bust, upon which most of the portraits of Henry VII. appear also to have been founded. The same may be said of the portrait of Elizabeth of York, not contained in this cartoon, but which formed a portion of the great picture, as may be seen by the copy (No. 135), just mentioned.

The other portrait, still more interesting, of Henry VIII. is contributed by her Majesty (No. 124), representing him when a handsome young man—certainly much under forty—the age suggested in the catalogue, painted according to King Charles's Catalogue by François Janet or Sotto Cleef. The critic of the *Times* suggests Toto de Nunziata, or Bartholomeo (Luca?) Penni. Sotto Cleef it could scarcely be the work of, as he came to England in the reign of Philip and Mary. Penni, we know, painted here in the reign of Henry VIII., and was employed by that monarch. Be it as it may, these two undoubtedly genuine portraits furnish us with the characteristic costume of Englishmen of rank (for there is no insignia of royalty in either), during the reign of Henry VIII., 1509—1549. No. 124, exhibiting the earlier fashion, the square-cut vest first appearing in the previous century, the embroidered shirt, &c.; and No. 134, the later fashion, subsequent to 1536, the date of his marriage with Jane Seymour, and the dress in which we are most accustomed to recognise "Bluff King Hal," just after the strict sumptuary law passed by him in 1533 (24th of his reign), restricting the wearing of certain furs, velvet, satin, damask, and embroidered garments to persons under the rank of knighthood.

Of his numerous wives, we have here three portraits, said to be of Catherine of Aragon, Nos. 74, 78, and 79. The first is that of Lady Rich, the second that of Margaret Roper (as delicately hinted in the catalogue), and the third, perhaps, authentic. Of Anne Boleyn there are four, only one of which (No. 103), is considered by connoisseurs to be entitled to the claim of being even a copy. Sir Montague Cholmondely's contribution (No. 107), exhibiting, however, a remarkable head-dress, by no means inelegant, but which has led to the supposition that the portrait is that of Anne of Hungary; and No. 114, from Lord Denbigh, not possessing the least character of the age as regards either painting or costume. Four of Jane Seymour, all fairly to be relied on, though two are undoubtedly copies. Lady Delawarr's contribution,

No. 125, is probably an original picture; at any rate, as an example of the costume of the time, it is valuable and interesting, the other figures being too small for minute details. One of Anne of Cleves, and one of Katherine Par; both reliable portraits.

No. 83, Queen Mary (of Guise), mother of Mary Queen of Scots. Remarkable for the head-dress; but see No. 106.

No. 100, Sir Anthony Fitzherbert, afterwards Lord Fitzherbert, Judge of the Common Pleas, 1522, died 27th May, 1538. The later date is on the picture, notwithstanding which the long hair, the fashion of beard and moustache, the *broad falling bands*, and the costume altogether, render it impossible for this picture to have been painted earlier than the time of Charles I.

No. 101, Sir Thomas Boleyn, Earl of Wiltshire and Ormonde, K.G. This is a clever portrait, but decidedly never intended to represent Sir Thomas Boleyn. There are two shields of arms on the picture. On the right are the arms of the old Company of Merchant Adventurers, and on the left, the arms of the person represented impaling those of his wife. The family arms of Sir Thos. Boleyn are well known to have been argent a chevron gules, between three bulls' heads, sable; and he afterwards quartered these with the coats of Butler and Rochford. On his garter plate he bears Butler (Ormonde) only, and the coat painted on this picture is perfectly different to any of these. His wife was Elizabeth, daughter of Thomas Howard, Duke of Norfolk, but there are no arms of Howard here. The age of sixty is painted on the picture, which corresponds to the appearance of the personage represented; but we have not the date of Sir Thos. Boleyn's birth, and, therefore, cannot draw any inference from that fact. His father died in 1505, and Sir Thomas in 1538. But it would be wasting time and space to argue from such data, when it must be obvious from the armorial ensigns painted on this picture that the portrait is that of some Master or member of the Company of Merchant Adventurers, and has no claim whatever to be considered a likeness of Sir Thomas Boleyn, K.G. I hope to be able to show whose arms are those on the left of the picture; but they are not to be found in the three principal ordinaries of arms at the Heralds' College, and may be foreign coats. Besides the fact that no insignia of the Order of the Garter is visible in this picture, the costume indicates a period posterior to that of the death of Sir Thomas Boleyn by nearly twenty years. I should like to know upon what authority this portrait has been attributed to the father of Queen Anne Boleyn.

No. 102. Compare this portrait of Henry Howard, Earl of Surrey, lent by her Majesty, with that said to be of the same personage contributed by the Countess De la Warr, No. 121. Surely they never can have been painted from the same individual. But independently of this discrepancy, there can be no doubt of the exceeding value of these two admirable pictures. The one from Hampton Court has been engraved and published in Mr. Shaw's beautiful work before quoted. It represents a gentleman in a scarlet dress of the period, in the peculiar attitude which is never seen after the time of Henry VIII. Lady De la Warr's contribution is remarkable for the beauty of the costume. The design of the embroidery of the dress is of the finest Italian taste of the sixteenth century. That both are grand and genuine specimens of the art of portraiture at that period there can be no doubt, and as examples of costume they are quite invaluable. Beyond this I have no remark to make.

No. 127, Sir Richard Brooke, Chief Baron of the Exchequer, 1526. If, as suggested in the catalogue, he died ("probably") in 1529, I doubt the picture having been painted within fifty years from that date.

Nos. 136—138, Thomas Radcliffe, Earl of Sussex, K.G. These two portraits, one apparently copied from the other, though attributed to different painters, should have been placed amongst those of the reign of Philip and Mary, as the Earl was only born in 1526; and was Mary's ambassador to the Emperor Charles V., and died in the reign of Elizabeth, 9th June, 1583. The costume, which is that of quite the middle of the sixteenth century, is not in harmony here amongst the nobles of the reign of Henry VIII.

No. 137. The same remark applies to this portrait of Frances Sidney, Countess of Sussex, wife of the Earl aforesaid. She died in 1588, and is represented attired in the fashion of that period.

No. 158, Lady Dorothy Devereux, who died in 1566, should for the same reason be removed to the reign of Elizabeth. Her high-crowned black hat and ruff are exceedingly incongruous in this situation.

No. 145. This is probably the most glaring absurdity in the whole exhibition. In No. 105, the visitor has already seen a large painting representing James V. of Scotland and his queen, Mary of Guise. The king in the prime of life, a married man, and dressed in the fashion of his time, rendered popular by the many portraits of Francis I. of France, and Henry VIII., his contemporaries; and here we have him shown us "*as a child*," in the dress of the reign of Elizabeth or James I.! If any James King of Scotland at all, it must be his grandson, James VI. and I. of England, just mentioned. I am at a loss to understand how such a misnomer could have been passed without an observation.

No. 149, Sir Henry Guildford. This fine portrait, lent by her Majesty, exhibits the earliest example in this collection of the collar of the Order of the Garter. The picture is dated 1527. All those I have previously noticed are later by some thirty years, though professing to represent personages of the reign of Henry VIII.*

J. R. PLANCHÉ.

THE ARCHITECTURAL EXHIBITION.

WE resume our notices of the works collected here.† Mr. G. G. Scott, we find, is represented only by deputy, in two minute prints of subjects both "delt. and lithographed" by J. Drayton Wyatt,—"St. Luke's Church, Weaste, near Eccles, Manchester" (85); and "The new Swimming-Bath now in progress of Erection for Brill's Brighton Bath Company (Limited)" (131). In the former the south-west view is placed in the centre of a cusped vesica-shaped outlined margin, and the corners of the sheet are occupied with the plan, north-east exterior, and the interior view, and a sketch of the parsonage, respectively drawn in small circles. As far as can be judged from these very small illustrations, Mr. Scott has a repetition of his favourite semi-circular eastern apse, with lancet arcadings, as introduced in the chapels at Woolwich, Exeter College, and elsewhere; in the latter, the lithograph of which is still more infinitesimal, a large central circular bath is roofed and make like a Gothic arcaded sort of Pantheon, with the arcades in two tiers, the lowermost of which is treated as a circular cloister fringing the bath, with twisted columns dividing the arches. Mr. J. Drayton Wyatt also sets forth Mr. W. H. Crossland, by representing the outline interior view of the carefully-designed new Church of St. Stephen, Copley, Halifax (229), "delt. and lithographed" on a little larger scale than the foregoing; and by the same lithographed process, Mr. Wyatt represents himself in a general ground-plan and view of "St. Andrew's College, Bradfield, near Reading, showing the proposed new Library, Studies, and School-room" (115), wherein the most prominent feature is apparently inspired by the old half-timbered town-halls of Leominster and Hereford. We should dispose of the efforts at novelty in the treatment of our street architecture, as shown by the designs here, briefly. There is too much laboured endeavour to produce sensational and startling effects in most of them; at the same time credit is due to the manner in which the difficulties presented by the advertising mania, circumstances, and confined sites have been overcome by some of the authors. "Houses and Shops, erected for Mr. W. Davis, in the Kennington Park-road" (105), and "House and Shop, Newington-causeway, Surrey, in course of erection, for Mr. J. A. Dunn" (106), both by Mr. Henry Jarvis, are very "shoppy" indeed; "Warehouses and Hotel, now being erected in Turnmill-street, Clerkenwell, from the design and under the superintendence of Lander & Bedells" (172), show a little rise beyond the architecture of that plain and unadorned neighbourhood; "Premises in Bishopsgate-street, being erected from the designs and under the superintendence of T. C. Clarke" (240), though occupying a good corner site, are sadly plain. The bright red brick superstructure rests upon a mass of glass shop-front, without a pillar or pilaster being carried down externally, to show how the superincumbent weight is supported; the glass front, in fact, is treated as a glass case, to enclose and conceal the bressummers and supporting columns, producing a case of "construction concealed." Mr. R. W. Edis shows in his warehouse in Philip-lane, City (162), how a narrow strip of frontage can be treated, by care and taste, with much appropriate architectural effect. He should not rely, however, too much upon the use of light-coloured materials for producing an artistic effect in the City: the whole of his white brick frontage here will become quite black in the course of a winter or two. "Warehouse, No. 5, Queenhithe, City," exhibited by John Turner & Son (200), a building at the corner of a narrow lane and of what appears to be a small "square," is possibly a case where internal planning and construction may be superior to the external architecture, and it is a pity that drawings showing these do not accompany the view to enable us to judge. Messrs. Banks & Barry exhibit their successful "Westminster Chambers, Victoria-street, recently completed for the Mutual Tontine Association" in a large and attractive view (227). The provincial cities are represented in the class of street architecture by a few examples only, and we are surprised at this. Liverpool only sends us "Alexandra Buildings," and Manchester, "Bank Buildings,"—the latter by a metropolitan architect. Sheffield, Newcastle, Leeds, Birmingham, Sunderland, Hull, Bradford, Nottingham, Bristol, and other large towns, as well as Edinburgh, Glasgow, Dublin, Aberdeen, and Dundee, have surely something new to show us, and we shall expect to see them represented here next year.

The pictorial aspect of architecture is represented here by some drawings by Mr. C. E. Giles. They are a series of small views of buildings, minutely and carefully finished, in water colour, mounted and framed with taste. St. Peter's Church and Curate's House, Nordelph, Norfolk, are shown by one internal and two external views (8). In the south-east view, a tall chimney occupies a very conspicuous position on the eastern end, and detracts from the ecclesiastical character of the eastern window of the church. The rectory-houses of Upwell and Welney, Norfolk (11), are neat and appropriate to a comfortable "living;" the Church of St. Michael and Parsonage, Monckton Combe (13); Christ Church, Upwell, Norfolk, exterior and interior view (14); and All Saints' Church, Kingweston, Somerset, interior and exterior view (15, 15A), are all depicted in the same painstaking way, and these views form a handsome series, fit for a drawing-room; but there is some sameness in the character of each of the designs, and Mr. Giles repeats himself too often. In an attractive isometrical view, set in a green landscape (31), Mr. J. M. Hooker contributes his "Design submitted in Competition for proposed new Workhouse, Driffield, Yorkshire." The buildings are designed with a feeling for utility and economy, combined with taste, and the classifications are kept up in the respective isolated blocks of buildings for vagrants and inmates, including the detached dining-hall, chapel, and hospitals, with the respective yards and wards: the main building for the inmates might have been three or four stories high instead of two, to economise space and expense, the able-bodied of course occupying the upper stories. Mr. G. R. Blount presents his isometrical view of St. Dominic's Church and Priory, Haverstock-hill (146). This exhibitor has a *penchant* for Geometric Decorated, and his designs and drawings have characteristics of their own. Observe any of the Roman Catholic conventual establishments erected in the metropolis, in Kentish rag, with Bath stone dressings, where all the windows are single cusped, mullioned, and transomed lancets, and where many gables and dormers are introduced, and you will recognise the work of Mr. Blount. Observe similar buildings represented in a stiff, hard, outlined manner at the Exhibition, and the same author will be recognised too. In the particular illustration before us, we have a church and imposing priory buildings, planted down in a district of commonplace villas, shown in the view for contrast. A church, with two western towers, is planned with the usual ecclesiastical arrangements, excepting that the space between the two towers formed into an open arcaded outer porch, is here called the Galilee. A cloister is formed, and bounded, on the north, by a block of buildings containing the guest- or dining-room, with dormitories over; on the west, by missioners' and instruction rooms; on the east, by the chapter and communicants' room, vestry, and sacristy; and on the south, by the church. A separate block of buildings to the north of the guest-

* To be continued. † See p. 318, *ante*.

room severally encloses apartments and offices devoted to lecture-room, refectory, meat refectory, bath, lay brothers' room, procurator, porter, wash-house, laundry, larder (too close to the laundry), stores, carpenter's shop, tradesmen, and the poor. The western or street façade of the church, and the priory buildings, are studied with a view to presenting a favourable aspect from without. A tower, with short spire, shown in the view on the east side of the cloister, does not appear upon the plan. Mr. J. P. Seddon exhibits two subjects only,—an elevation of his design for Llandaff Cathedral font (166), introducing sculpture in the cusped arcaded upper rim, and marble and serpentine shafts in the clustered columns of the pedestal; and his "Design for a Fountain, proposed to be executed in Ransome's patent Stone for Australia" (167), where the artificial material to be employed will be tested by the minute details. At 165 Mr. S. S. Teulon displays, in very unsatisfactory small pen-and-ink etchings, perspective sketches of four new churches erected from his designs,—St. Thomas's Church and Parsonage, Agar Town, London; Church of the Holy Trinity, Hastings; the Parish Church of Hanworth, Middlesex; and the Church of St. Paul, Greenwich. The drawings are too small, and lack clearness of outline and breadth of shadows; there is sufficient originality of treatment, however, in all the designs observable to make us desire to see them more intelligibly expressed.

There are two handsome designs exhibited for the Albert Memorial, Belfast,—"Design for the Prince Consort Memorial Clock Tower," by Mr. John Johnson (41), and "Design for Albert Memorial," by W. H. Jewitt (67). The Italian campanile has formed the theme in both designs. Mr. Buckridge and Mr. Johnson (Austen & Johnson) both carry us back to the Middle Ages, by their adaptations (almost servile) of early Gothic buildings in the "Isle de France." One would expect to meet the "Buildings for the Sisterhood of the Holy Trinity, Oxford," by Mr. Buckridge (40), in some quaint nook of a quiet ancient French town, where the whole external character of the buildings, adapted to an undulating street site, is excessively ecclesiastical, the chapel, with its high-pitch roof and *flèche* or bell-turret spirelet striding thereon, being properly prominently expressed. Mr. Buckridge illustrates his views in faint and feeble pen-and-ink outline. Mr. Johnson is not, however, quite so servile or so faithful in the imitation of his favourite style; he is falling back, too, in the vigour of his representations, for what could be harder or more stiffly outlined and incorrectly shadowed than his south-west pen-and-ink view of St. Stephen's Church, Newcastle-on-Tyne (82), or weaker than his interior view in pencil outline of the same building (76)? The latter must have been drawn by a pupil. Mr. Johnson repeats, in his "Richmond Grammar School showing proposed Additions" (46), the same flat ungainly-looking buttresses represented in the church at Newcastle, which are not carried to the ground, but start from a string-course half way up the height, cutting the buildings awkwardly in two. This exhibitor should be congratulated for contributing, however, to the general excellence of this year's exhibition, for he is the only member who exhibits from the busy head-quarters of the Northern Architectural Association at Newcastle-upon-Tyne. Mr. Pritchett, another active north-country architect, comes out strongly with illustrations of six subjects, mostly ecclesiastical. Nos. 63 and 174 are respectively north-west view and interior view of "Design submitted in competition for proposed Church at Hunslet Moor, Leeds;" 47 is a "North-east View of a Church in course of Erection at Saltburn-by-the-Sea;" 48 and 174 are the south-west and interior views of the "Wesley Chapel and Schools now in course of Erection at Halifax" (these should have been hung together, not in separate rooms); and at 93, the beautiful east end of the collegiate church of St. Cuthbert, Darlington, recently restored by him, is taken and spoilt by the aid of a bad photograph. If architects will exhibit their buildings by photographs, these should be well done, especially when they represent restorations of important ancient buildings. Mr. William White sets an instructive example by exhibiting some well-figured and well-fingered working elevations, sections, and plans, instead of showy perspective views, of a building erecting from his designs—the "New District Church of St. Saviour, Aberdeen Park, Highbury Grove, Islington, now in course of erection (with omission of the vaulting) at the sole Cost of the Proprietor of the Estate, the Rev. W. D. Morrice, Prebendary, Sarum" (51A). The design and details are carefully studied, but we wonder at the motive that induced him to introduce a tower at the junction of nave and transept in an edifice a little more than 100 feet long. In so small a church the tower piers obstruct the view or prove weak. In the same manner, by working sections, elevations, and plan, the same author shows his new church of SS. Philip and James, at Merrifield, in the parish of Antony-in-East, Cornwall, on the estate of Mr. W. H. Pole Carew (17, 18, 19). A "proposed tower" is the most important feature. Mr. Rowland Plumbe contributes his interior and exterior views of "Proposed Congregational Mission Church, North Bow. Accommodation for 500 persons: Cost, 1,700*l.*," (6, 7). This is certainly a cheap church. Mr. T. H. Watson sends sketches made on the spot as Travelling Student of the Royal Academy in Ferrara, Florence, Treves (2, 3, 4): they are careful and clever illustrations of ancient buildings. Equally instructive are the sketches of "Karnak," of "Circular Temple at Balbec," and of "Abydos, Upper Egypt" (187), sent by the Rev. J. L. Petit. The skies cannot be natural, for they are all alike in the three subjects. In a "Design for a Town Church. Interior showing Chancel" (89), Mr. W. H. Jewitt shows what we may call 'prentice work; the composition is a dreamy mixture of the styles of Street, Butterfield, and Scott. In 193 Mr. C. C. Robins does not economize space, for his "Competition Design for laying out the Thornton Heath Estate, Croydon," shows the villas arranged in a straggling manner; whereas Mr. J. M. Hooker, in his "View showing proposed Arrangement of Houses on 10 acres of Land at Brighton" (126), makes the most of the ground by a clever disposition of crescents, rows, detached and semi-detached villas. In both these drawings varied designs for the buildings are shown, as well as the method of laying them out on the ground. In two very small photographs of etchings, Mr. Robert Speechley shows his "Views of Design for proposed Museum, in the Province of Canterbury, New Zealand" (147). The building is too important to be judged of or criticised from the small illustrations shown. The Royal Arcade, Brighton (frequently illustrated), is depicted here by Mr. John Ellis by a "Section, Exterior, and Interior of a Shop-front" (248). It is not clear whether the decorations employed are superficial in colours or constructive materials. The painstaking "Design for a District Church" (239), by Mr. G. R. Green, is clearly intended for a town, and not for the country. It is placed in the centre of an iron-railed "square." Mr. Green has much to acquire yet. Mr. G. Goldie rather copies work from Viollet-le-Duc in his Romanesque "New Cathedral about to be erected for the Roman Catholic Bishop of Elphin, at Sligo, Ireland" (186). The view is faintly, though boldly, drawn, and represents the western front in full, with the southern side foreshortened. Mr. Arthur Ashpitel exhibits "Tomb of the late Mr. Borthwick, M.P., and Margaret, his Wife, about to be erected in the Brompton Cemetery. The Principle of the Design is based on those of the Memorials at the Early Christians, found in the Catacombs at Rome" (198). This is a sarcophagus, with bright red pilasters, and a coped cover. Mr. E. C. Robins says that the decorations—rather elaborate with gold texts and chapters—in the eastern recess of St. Paul's Chapel, Kentish Town, were "executed by Messrs. Green & King, of Baker-street, upon Keene's Cement, *within twenty-four hours of its being laid.*" They look as bright as blue and red and gold can make them in the drawing (210), but, as to their ultimate result, the architect may one day feel the force of the saying,—"More haste less speed."

Mr. Cuthbert Brodrick's photographs from seven drawings of the Custom House, Bombay (73), show that he has favoured the native architecture, for his design is in the minaret, pagoda, ball-and-spike cupola, horse-shoe-arched Hindostanee style. Mr. C. J. Phipps shows unsatisfactory "Photographs from Buildings in Bath erected in 1865" (80), and contributes the cost of them,—one of these, the interior of hall of a villa on Lansdown, might have been omitted, it is so dark; Mr. T. Lockwood, his design for the Town-hall, Chester (87), not the accepted one; Messrs. Hadfield & Son, their St. Hilda's Catholic Church, Whitby (21); School and Chapel, Elsecar (44); Cemetery Cross at Glossop (72; the end view only of the Orphanage, Roehampton (257), in a fine photograph; and a photograph of a clever bow-window to a villa in Victoria Park, Sheffield (258); and Mr. Welby Pugin, the Boys' and Girls' extensive and expensive Orphanages at Hellingley and Bletchingley, built for the Duchess of Leeds (232, 236).

Let us mention among the eccentricities of the Exhibition a fiery-coloured "Drawing of a Land Steam Fire-engine," by J. W. E. Hall (199); a "Grotesque Design for a Door Panel (Old Mother Shipton)," by F. Wilson (212); "The Cathedral Church, Pavia," by E. L. Fryer, from an antiquated print; "The South Porch of Lincoln Cathedral," by C. B. Moore (52A), (all amateurs), and we close our review of an encouraging and not uninstructive display.

EXHIBITION OF THE ROYAL ACADEMY.*

IT may occur to some who visit the Exhibition of the Royal Academy this year that the founts at which artists take their metaphorical draughts of inspiration are getting very dry; or that what there is for them to drink there is too unpleasantly hard for them to invite frequent recourse to it for reinvigoration; so that they occasionally slake their intellectual thirst with a home-brew made from the memory and old recipes.

Is Mr. S. A. Hart, R.A., satirical? or does he mean his fine study "The Throes of Composition" (36) to serve as an apology—to request the public's merciful consideration for such sufferings as genius undergoes when selecting and arranging the teeming mighty thoughts, promising to burst the brain that labours to give birth to them, if left without the restraint of the strong hands that in due course will bring them forth? Mr. Hart's pictures this year are amongst his best.

Mr. Armitage is almost alone in his adherence to the exalted and severe in the practice of his art; and his two contributions are very conspicuous,—though the more agreeable example is not favourably placed—not only by reason of the scarcity in these times of such productions, but by the grace with which he has rendered an episode in the life of the Saviour. 503, "The Parents of Christ seeking Him" during the time of His disappearance that preceded their finding the child Jesus in the Temple, are here supposed to have stopped to make inquiries of those who are met at a fountain. The other illustrates with forcible expressiveness "The Remorse of Judas" (10), who is offering to return the money he has received for the betrayal. Both these examples, with the diverse qualities that make them meritorious, sustain Mr. Armitage's reputation in the highest class of the profession.

Mr. G. F. Watts has but a single figure to recall his great capabilities, "Thetis" (23), very exquisite as a chastened and elegant treatment of the nude.

Mr. P. H. Calderon, A., asserts his claim to the possession of all the accomplishments that are requisite to the perfect success of the spectacular department in any drama he may choose to mount; but "the play's the thing," after all; and it is disappointing, to say the least of it, to see such good actors as Mr. Calderon's able management might make of them, in procession as an escort to "Her Most High, Noble, and Puissant Grace" (24), simply to show that his aristocratic ladies in their splendid fifteenth-century habiliments can look as if they lived in that time, and that for executive power, he, as a painter, would have adorned any. 369, "On the Banks, Clain, near Poitiers," with a group of washerwomen cheerily at work, pursuing their vocation, proves him a master of out-door effect and a clever delineator of landscape.

Mr. F. Leighton, A., also arranges, on a grander scale, in processional order, a number of those ideals that have been wont to realize for him all the typic charms in what he accepts for loveliness in woman, and to win accord from many. Theocritus has suggested the present subject, in an allusion to a similar ceremony of a "Syracusan Bride leading Wild Beasts in Procession to the Temple of Diana" (292), but speaks more definitely of the beasts than the beauties who are consequently more obliged to the artist for making so much of them. Priestesses and bevies of maidens, some wreathing flowers, others carrying in their arms the cubs of tamed animals, accompany the bride, who is leading a lioness, wearing a garland of roses. The groups are admirably composed, though a recurrence of the same features detracts from variety in the position of the heads; and the figures of the

* See p. 339, *ante*.

spectators, who are in front of the marble platform, appear too small to be proportionate with those of the spectacle they are beholding; but with all the exceptions that may be taken to it, the work is an accessory to exemplify the particular excellencies Mr. Leighton is already famous for.

Mr. M. Stone, as an author of romance, has unfortunately provided himself with rather bare material: considering how well calculated his resources have made him of expounding any amount of it, the trite incident of "Stealing the Keys" (246) is hardly enough to dilate upon to the extent he does. A Cavalier's daughter very nicely portrayed, making efforts to secure his escape from his Puritan enemies, is not a novel conception; but on a smaller scale it would still have been thought worth the relating when told so well.

The writer of fiction enjoys one great advantage denied to the painter of it; for the latter there can be no such freedom from the responsibilities of dates and circumstances as the delightful and indefinite era, "Once upon a time," offers for his more fortunate brother; nor has he any equivalent to that emphatic phrase, "more easily imagined than described," to resort to, for expressing himself and satisfying those he addresses; but, on the other hand, he has such assistants in the representations of localities and costume as may enable him to identify any event he may select, with the period that happens to be the most frequently associated with its occurrence, to help him tell his story.

Mr. J. Pettie rests under some such obligations for making clearer than he does alone that the patient old goody in a blue cloak and custody is undergoing "An Arrest for Witchcraft" (179), for there is little else to distinguish the scene from an ordinary exercise of police regulations of the present day, besides the announcement in the catalogue, and the costume and properties that indicate the James I. era, when such persecution was most rife. The picture is admirably painted, however, and shows a similar appreciation of refined and qualified colour with Mr. Orchardson's even more forcible expression of it. Vitality in the action of the figures that are cleverly individualised by well-studied heads, though all appear influenced by consent in the execration of one who looks less like a witch than many of her assailants, is one of the elements that are comprised in its merit; but the composition is rather singularly managed from the crowd so closely occupying one portion of the canvas, leaving a vacant space that asks for better stage dressing than the two walking gentlemen can manage to provide for it, for they are rather out of place, with little apparent excuse for their introduction to such society.

There is less to suggest side-scenes, flats, and footlights in Mr. W. F. Yeames's perspective view of a real performance. He appears of the very few who attach great importance to the choice of matter that should evoke the best method of treatment, in contradistinction to relying upon technical merits alone. 314, "Queen Elizabeth receiving the French Ambassador after the news of the Massacre of St. Bartholomew;" an incident of the many that celebrate her reign,—equally well worth recording, as certain to afford opportunities for producing effective pictures; and, as in this case, far more likely to be remembered years hence in connexion with the painter's name, than any mere power of using the brush could make a superior exhibition of skill with no such foundation. History is discursive and romantic enough to furnish a basis for any sort of narrative it may be thought desirable to deal with: a bank with every variety of Stock for the artist to make such investments in, — very speculative ones sometimes, — as his faith in the security and his means will justify; a fair amount of interest is safe to be returned for judicious outlay, since the establishment is one of the least likely to be exhausted, and its liabilities are very limited indeed just now, judging from the few who draw upon it. Mr. Yeames depicts Queen Elizabeth seated in solemn state, in the midst of her court, arrayed, with her, in the deepest mourning, as she is awaiting the approach of the gaily bedizened Frenchmen; who, embarrassed at the lugubrious aspect of affairs, hesitate before traversing the wide distance that separates them from the rest of the assembly; and to which, leading up to the whole extent of the spacious apartment, an immense length of black carpeting gives an awful emphasis, as it thoroughly suggests the awkwardness of so silent and gradual a march up to the distant Royal presence. The idea of silence is so cleverly conveyed that the spectator would fancy he had but to wait and hear that chief ambassador's shoes creak, or the crinkling of his white satin doublet, as he stands bowing as well as his astonishment will allow him.

Mr. D. W. Wynfield has not succeeded in accounting for the traditional fascinations of Anne Boleyn. Perhaps they are better left to pen-and-ink expression than pencil, and come under the category of those aforesaid things "more easily imagined than described." The fair to-be-beheaded one receiving the attentions of Lord Percy (547), when she was maid of honour to Catherine of Aragon, has not added another flatterer to her list this time.

574, "A Jew's Daughter accused of Witchcraft," by Mr. J. E. Hodgson, has its subject made apparent, though the Middle Ages are the epoch assigned to it; but it is the more easily comprehended from some dramatic expressiveness, and more particularly from the introduction of evidence to sustain the accusation—in an attenuated child for whose decline the supposed sorceress is protesting she is not answerable. There is not much originality either in the conception or treatment of this work; and although remarkable with many others, by others, for clever executive ability, it is less attractive than in former applications of its use by the same painter.

The same may be said of Mr. H. S. Marks, whose quaint humour and conscientious finish are not displayed to the full extent of their worth in the two instances of their employment exhibited here. 393, "My Lady's Page in Disgrace" and the stocks, sitting in sullen indifference to a lecture the major-domo is reciting for his special edification, is too slight in its purpose to deserve so considerable an amount of attention its manipulative completeness betokens it must have cost; and 505, "The Notary," in his office and official capacity, engaged by clients, only divides the honours with the well-arranged and precisely-painted interior he inhabits.

ANGLO-INDIAN ENGINEERING.

THERE is one operation connected with engineering in India which was commenced when that vast territory was best known as the place all the rich old uncles came from, and is not yet completed in these days when that Sinbadian region is looked to by the rising generation as an untilled field affording scope for the best energies of the young and able. This long protracted operation will form the basis of many others,—it is the great trigonometrical survey of India extending at the present time from Cape Comorin to Thibet, and from the meridian of Calcutta to that of Cashmere. Captain Lambton, who had previously served in America, on the conclusion of the war with Tippoo Saib, proposed a geographical survey of part of the peninsula, which, recommended by the Duke of Wellington to Government, was ultimately developed into the scheme now so far accomplished. It was strongly opposed by the exponents of a system of survey made on an astronomical basis; as well as frequently interrupted by disturbances in the country, and the jealousy of the native princes, who were often puzzled by the instruments, flags, and other signals; but under a succession of officers, in a period of time extending over sixty years, the tract mentioned out of the 1½ million of square miles to be surveyed has been accurately completed. Travelling in the desert carrying heavy loads over sand-hills, which present themselves interminably one after another, and into which the feet sink ankle-deep at every step, appears to be less formidable as an undertaking than other necessary proceedings, such as the crossing of rivers and placing stations on lofty eminences never before trodden by mortal man. An Indian surveyor's bridge over a foaming torrent often consists of two trees laid across and supported on corbels composed of branches; in some cases, hawsers only are used, which are formed by twisting twigs of silver birch, on which the surveyor is dragged across, lashed to a running tackle and loaded with the delicate instruments upon which the accuracy of his observations depend. Some of the mountain stations are 18,000 ft. above sea level. Jungles and marshes form further varieties of difficulties that present themselves, to be surpassed by the ingenuity and enterprise of these pioneers; and bodies of armed horsemen appearing suddenly on the field and jealously watching the operations, add fresh piquancy to the scheme.

Whilst this long task has been gradually approaching completion, India has made quicker strides in other engineering directions. Perhaps the most fruitful among these is the establishment of four civil engineering colleges. These are situated in Roorkee, Calcutta, Madras, and Poona. Of these, the Thomason civil engineering college, Roorkee, is the oldest and most concerns our present purpose. For in connexion with it is a printing-press office, whence are issued a series of quarterly professional papers, under the auspices of Major J. C. Medley, R.E., the principal of the college.* These papers give us, as far as they go, graphic pictures of Anglo-Indian progress. They are very creditably illustrated by photographs,—positively sultry in their suggestiveness of intense heat and glare,—as well as by engravings and lithographs. The first quarterly number of the third volume is the last production of the press. This gives a luminously clear photograph of the Tonse Bridge, and lithographs showing an elevation of abutment and one pier, a general plan of one half-span and the staging used in the erection of the girders. A paper on the water supply of Fort William, by Captain S. T. Trevor, R.E., garrison engineer, Calcutta, is illustrated with a plan showing distributing mains, details of filter, and a second plan showing distributing reservoir and force-pipe. This is followed by notes on *stresses on lattice girders*, by Mr. J. Hart, C.E., executive engineer, Dharwar, with numerous diagrams and tables. The Allahabad central prison, to accommodate 3,200 prisoners, is next shown in lithographs, with a specification setting forth that convict labour is to be employed wherever practicable in its construction, and that the foundations of all walls must be of concrete rammed in layers, the flooring of barracks of earth with a 6-in. substratum of kunkur or pounded bricks, the cases of the blowers used for ventilation and the main air-flues of pucka masonry, and all the woodwork of good sâl or sein, and other local necessities. A report by Major Briggs on the Assam Trunk-road, illustrated by a large map of the province, tells us that this proposed route will be about 355 miles in length (about the distance between London and Berwick-upon-Tweed), through tracts of swamps, grass, and forest; and that it will require 361 millions of cubic feet of earthwork, twenty-one wrought-iron lattice bridges of from two to five bays of 60 ft. each, and fifty-eight similar bridges of single spans varying from 20 to 60 ft., 270 masonry culverts, twenty-eight temporary bungalows for shelter of the overseers, and about eighty-five millions of superficial feet of jungle clearing. This project, now in course of execution, is to be supplemented by a road from Gowhatty to Sylhet, cutting through it at right angles, reminding us of the vast operations of the Roman legions. Following this we have a description of the "Comptage Ambulant;" and Lieutenant J. H. Dyas, Director of Canals in Punjab, gives some valuable particulars of experiments made in the interest of the Baree Doab Canal, which presented some unusual features. These, with some remarks on modes of levelling, and an instalment of a comprehensive history of the great trigonometrical survey, which will form an important contribution to the series, complete the number, and give us a vivid impression of the extent of recent public works.

The portly volume, made up of last year's contributions, very considerably extends and intensifies this impression. It contains forty-two "professional papers," and thirty-three illustrations, two of the latter being photographs of the Thomason College, and the Sealdah railway station. Major Medley, who is also the author of three additional papers on brickwork in India, Indian barracks, and the Ganges canal controversy, leads off the volume with an account of the four colleges. About 700 individuals have been qualified for the public service in the Thomason College, at Roorkee. At the date of the publication of the major's information, it contained 114 students, of whom six were officers, ten civilians, thirty-six soldiers, and sixty-two natives. The instruction of the latter is carried on in the vernacular, several works being issued by the college press for the especial use of natives; and after a stay of two years,

* "Professional Papers on Indian Engineering," vol. ii. 1865-66. Edited by Major J. C. Medley, R.E., Assoc. Inst. C.E.; Principal Thomason, C.E., College, Roorkee. Roorkee: Printed and published at the Thomason College Press. Calcutta: Thacker, Spink, & Co. Bombay: Thacker, Vining, & Co. Madras: Gantz, Brothers. London: Smith, Elder, & Co.

they pass out as sub-overseers and sub-surveyors. The architect of this college was Captain Price, now chief engineer at Hyderabad. It is of a classical design, having columniated centre and wings, the former being surmounted by a dome. It contains various class and lecture rooms, a library, a drawing-hall, museums of geology, natural produce, and a model, besides the press we have mentioned, where printing, binding, and lithography are executed; a wood-engraving department, a depôt for surveying and mathematical instruments, and a meteorological observatory. Officers and soldiers are not admitted, and there is no vernacular department. Major Medley remarks, that the general results have not been so satisfactory as at his college, the majority of the students, Bengalees, being more fitted for sedentary pursuits than for the active life of a practical engineer. The Madras College is carried on in a building that was once the palace of the Nawab of the Carnatic. This establishment turns out an average of forty students annually, out of a total of 103. The engineering school at Poona, at first intended only for the training of native and European subordinates, but assisted by the gift of a lakh of rupees from the late Sir Jamsetjee Jejeebhoy, about to expand itself into a college, promises to compete with them all in usefulness. The first principal is to be the architect of the new building, Captain St. Clair Wilkins, who at the Poona conference, held in August, 1864, showed that he had so far qualified himself for his post by studying the specialities of native character. He then gave, as the result of his observations, his conviction that "the native mind is eminently practical." Major Medley combats this conclusion by averring that the natives who flock to the Government colleges to be trained into sub-overseers, are not the sons of masons, carpenters, blacksmiths, or the working classes, but the sons of bunyahs and others, of sedentary pursuits; while he admits that the native working classes have not as yet appreciated the benefits of education. Captain Wilkins proposes a *special* training for students, deeming it expedient that they should be compelled to confine themselves to a line of study calculated to make them either builders, surveyors, draughtsmen, or estimators, but not all four at once. Major Medley confutes this proposal, with the assertion, that however desirable special training may be in England, a general training is to be preferred in a country where a man is called upon to undertake the conduct of works of various descriptions.

This volume further affords us two examples of that unwise proceeding, the building of churches by engineers. As may be guessed, they are devoid of everything expressive of sentiment, feeling, traditions, or of pictorial association of idea; although it must be stated fairly that these two instances are beyond the average of what such structures have been when treated from a similar collateral point of view. The first, St. Mary Magdalen's Church, Meean Meer, Punjab, was designed and built by the late Captain J. N. Sharp, Bengal Engineers, in the *Early English style*, the outside of finely plastered mortar, containing a small admixture of soorkhee, so as to be of a fine reddish tinge, lined in imitation of stone joints, and the inside walls being plastered with mortar made from marble out of the city, from old buildings, also jointed in imitation of stone.

The Early English sentiment has suffered somewhat in its transplantation by military hands. The second design is that of Attock Church, Punjab, built by Mr. W. B. Harington, executive engineer, Peshawur. It is accompanied by a specification, setting forth in the briefest terms that the church is to consist of a nave (61 ft. by 22 ft.), with north transept (21 ft. by 12 ft.), side aisles, a chancel (16 ft. by 14 ft.), and a tower (10 ft. by 10 ft.) rising to a height of 74 ft. The tower, placed on the east of the transept at the angle formed by it with the nave, is balanced by a porch in a similar position on the opposite side, — an unusual arrangement, unlikely to have occurred to a direct professor of the noble art and science of architecture. The ground floor of the tower is appropriated as a vestry; and Mr. Harington suggests that the upper floor of it can be used as an organ-loft, as it can be approached by steps and staircase on the north face of it without intrusion into the lower apartment. Despite these unecclesiastical arrangements, there are provisions for building the structure more in accordance with usage. The walls are indicated as masonry, the interior only being plastered, though the columns of the nave and arch-mouldings are of brick. The roofs are covered with tiles or shingles, except that of the tower, which has a timber framework sheeted with zinc, with a standard at each angle. The punkahs here are deep full fringes, weighted with lead, attached to ornamental bars of sissoo, suspended from the iron tiles of the roof trusses. The cost of the building was estimated at 16,096 rupees. Captain Sharpe's design cost about 90,000 rupees. It accommodated about three times as many persons, that of Mr. Harington being calculated for 250 sittings.

The construction of the Alquada Lighthouse by Lieut.-colonel Alex. Fraser, R.E., although apparently as far removed from the tenor of his usual occupations, is open to no such objections. Here utility, as shown in stability and efficiency, is the chief requisite, and no study of centuries of art and field is required. It is now ten years since Colonel Fraser was appointed by the Court of Directors of the East-India Company to make the necessary surveys, report, and estimate of the proposed work; and it was not until April, 1865, that the light was exhibited for the first time. The preliminary arrangements involved a survey of the Alquada reef, which consists of two ridges of rock about a quarter of a mile apart, with a channel between them from 2 to 3½ fathoms deep, in the centre of which rises a small detached rock, only visible at low water. This is situated in the direct course of vessels sailing from Calcutta to the Irawaddy, southward of Cape Negrais. Colonel Fraser also proceeded to England to inspect existing lighthouses, and finally fixed upon the Skerryvore, on the west coast of Scotland, as a model for his guidance, as its position was most analogous to that of the Alquada reef. While adopting the leading features of Mr. Alan Stevenson's design, Colonel Fraser contended that if he should be able to make the necessary alterations in the interior to suit it for the dwelling-place of people of a different race in a different climate, and construct it successfully with the unskilled labour at his command, he should still be entitled to considerable credit. When we ascertain that the nearest spot from which he could procure any materials was the island of Callagouk, distant 210 miles from the reef, and that the work was done by common "Classies," picked up at Calcutta, assisted by the crew of the steamer *Nemesis*, and that the foundations were constantly filling with water at the least sea, we must ungrudgingly concede this. The establishment organised upon the uninhabited island of Callagouk, a dense jungle, for the quarrying of the necessary granite, proved so difficult of management, that it was eventually deemed expedient to bring part of the stone from Singapore. The mutiny caused further delay. The weather proved unfavourable for the two seasons. But course by course the mighty stones, varying from half a ton to 3½ tons in weight, were got into position, by means of lewises; and by the fifth season the stonework was completed up to the parapet. Upwards of 4,000 tons of granite in these large blocks were dressed, shipped, conveyed to the reef, and disembarked in a daily contest with the elements. Men, materials, provisions, shelter, and water had all to be provided from great distances, calling into action no little amount of forethought, contrivance, resource, and perseverance. A Government order, quoted in the paper relating to this arduous undertaking, commending the zeal and judgment of Colonel Fraser, says,—"It is seldom that it falls to the lot of any individual, in India especially, to carry through from beginning to end a work of such magnitude, and extending over so long a period. The work itself is unique, certainly in the East; and whether regard be had to the cost, execution, or rate of progress, may challenge comparison with its somewhat smaller prototype, the Skerryvore, on the coast of Scotland." The total cost of this work was about 100,000*l.*, or 10 lakhs of rupees. Major Medley indicates that an account of the work will be published by Government. A woodcut, showing tower and reef, is the product of the wood-engraving department at the Thomason College.

For railway news we have an extract from the specification for the works on the E. I. Railway branch line from Allahabad to Jubbulpore, 228 miles, now being executed by Messrs. Waring & Hunt, communicated by Mr. H. P. Le Mesurier, chief engineer; a description of the Sealdah railway station, designed and constructed by Mr. Walter Granville, C.E., a building "in an Italian style of Oriental architecture," covered by three light wrought-iron roofs, each 615 ft. long, and possessing platforms more than 1,000 ft. in length, and 27 ft. in width; a slight description of the Punjab Railway Institute, formed by the chief engineer (Mr. J. Harrison) and the late Mr. R. W. Stevens, as a place of rational amusement and instruction for the numerous European *employés* on the company's works at Nowlukha, Lahore, containing a reading-room (30 ft. by 21 ft.), with small book-room and khansamah's room attached, surrounded by a verandah 8 ft. wide, and a commodious swimming-bath, 44 ft. by 27 ft., with a depth of 10 ft. of water, provided with two small dwelling-rooms; a reprint of an important pamphlet on roads and railways in India, by Sir William Denison, K.C.B.; and a description of the line and works of the said railway, by John Brunton, abridged from the minutes of proceedings of the Institution of Civil Engineers. The selection of papers printed is noticeably made as much with a view to the enlightenment of Indian residents on European progress, as informing Europeans of Anglo-Indian transactions. Thus we find some French wrinkles made of much account; besides a lengthy memorandum concerning the Cavour Canal. It having occurred to the chief engineer of irrigation works, North-west Provinces, that much valuable information might be brought to bear upon the proposed remodelling of the Ganges canal by reference to the works in progress in Piedmont, he suggested to the Government that it would be advisable to procure a copy of the Cavour canal project, with plans, &c. The London directors of the Italian Irrigation Company promptly furnished ample details of the scheme as set out by the Cavalière Carlo Noé, inspecting engineer of the crown canals, which are here reproduced. An article on *Les Annales des Ponts et Chaussées*, entitled "*Expériences sur la Dilation des Maçonneries*," par M. Bounceau, is also laid under contribution. Certain fissures appearing in the masonry of extensive works at Havre, which could not possibly be attributed to settlements, the French engineers were obliged to come to the conclusion that they were occasioned by contraction caused by decrease of temperature. In order to test this hypothesis, a series of experiments was made, the order and nature of which are fully described, which resulted in the formation of a table of co-efficients of the expansion or contraction of materials employed in masonry, also given. Mr. A. Hughes, roughly summing up the results of the experiments, says gypsum expands most and marble least; *béton* expands more than brickwork, or three times and a half, when the bricks are laid as stretchers, and three times greater when the bricks are laid as headers. The experiments were made on various substances at hand,—Portland cement, tempered and allowed to set under water; mortar of Portland cement, containing two parts of silicious sand to one of cement; brickwork, set in the above mortar, all the bricks being laid stretchers; the same brickwork laid as headers; *béton*, composed of mortar as above, and round silicious pebbles; limestone, from Ranville quarry; limestone from Maladiere à Caen; granite; marble; gypsum. Others made on bars of masonry were conducted under water, the temperature of which was raised from 50° to 203° Fah. We quote one mode of proceeding. "The bar of masonry (some 6 ft. or 7 ft. in length) rested on rollers at the bottom of a tank, and butted at each extremity against the lower end of a vertical lever or rod. This lever was connected with a horizontal axle, supported at each extremity: above and to the axle a telescope was fixed. The two supports were separated from the walls of the furnace, and the axles, as well as the telescopes, were wrapped in cotton wool, so as to guard against the effects of radiated heat. A telescope having been placed at each extremity, when the block expanded each telescope became deflected, describing an arc on a scale placed at a distance of about 100 mètres (328·08 ft.): this gave a very appreciable length of arc for a very small elongation in the bar of masonry."

Canals are sparsely treated of in two papers on a project for the Sutlej Canal, by Captain J. Crofton, R.E., and in a suggestion for canal falls, by Lieut.-Colonel Fife, R.E.

Bridges of several descriptions are illustrated. Archdeacon Pratt describes railway suspension bridges; Lieut.-Colonel Taylor the Barra Bridge, originally intended to be a strut-and-strain timber erection, but reconsidered on a further acquaintance with the eccentricities of the Barra, which carried off the pile-engine and assistant-engineer in charge, in the middle of a night, eventually stranding engine and engineer some six miles down the impetuous stream; Mr.

S. Hart gives details and diagrams of Dharwar bridges; and Lieut.-Colonel A. Cowper, R.E., some useful remarks on military bridges. The last-mentioned writer having been instructed by Sir William Mansfield to compare the merits of the English and Austrian system of pontooning, as represented by Blanchard and Byrago, proceeds to describe them both minutely, and then to draw up a table showing their relative points. He shows that the Austrian system fulfils 96 per cent. of the qualities requisite in a good bridge system, while the English only fulfils 69. The requisites of an efficient bridge train are mobility and speed. Lieut.-Colonel Cowper mentions as the essential elements of a bridge system,—First, easy adaptability to the beds and banks of all sorts of rivers; secondly, stability and firmness during the passage of large bodies of men, horses, and artillery; thirdly, strength and durability as an article of equipment; fourthly, capability to transmit the covering force, and at need, the army itself, when the obstacle is too considerable to be bridged over; and fifthly, mobility to follow the movements of an army in the field, and portability for transport by men at those places where wagons cannot be taken; and then brings forward a system fulfilling those conditions to a perfect extent, into which, however, we need not now follow him.

Major F. de Bude, R.A., contributes a paper on the possibility of ventilating and cooling barracks and jails by means easily available in India and at small expense,—a most desirable field of inquiry. He has discovered no new plan, however, simply confining himself to an adaptation of that used by Messrs. Chambers, of Edinburgh. While in cold countries the air in rooms is warmer than the air without, the case is exactly reversed in hot climates. In India, the external atmosphere is so much hotter than the hottest and most vitiated air inside a room that Major de Bude confidently asserts the latter could not escape even if outlets were left for it in or near the roof. He describes the only ventilation adopted in India (not reckoning the stirring of the air by means of punkahs as any) to be that which is effected by thermantidotes (or revolving wheels with fans) introduced in walls and doors. The external atmosphere sucked in at the axles by the revolution of the wheel is blown into the room through the mouth of the thermantidote after being cooled by passing through wet tatties. All doors and windows being carefully closed to exclude insects as well as heat and dust, it follows that the air displaced by the entrance of the blast made by the thermantidote must find an exit through chinks below doors and near the bottom of the room; consequently the really vitiated air near the ceiling is not disturbed by this method. After describing Dr. Reid's plan as carried out at Westminster, he suggests for barracks the use of a furnace to exhaust air from the rooms, also the possibility that a Persian wheel worked by a couple of bullocks could be made to turn a thermantidote wheel with sufficient rapidity to effect the same object. Hollow bamboos or light tin pipes suspended from the roof complete the scheme. Or, "in buildings to be constructed hereafter, instead of metal or bamboo tubes, let a pipe of masonry run along the top of the walls with openings into the rooms; the pipe being the width of the wall strengthened by arches where it would have to bear the weight of the beams, the section across the pipe having an area of 6 in. by 6 in. The expense, after the first start, would be that of working the thermantidote, or of keeping the furnace alight at one end, and of filling the trough (pierced with holes for water to drip through on to the tattie) at the other." Major Medley estimates the quantity of foul air to be withdrawn from a barrack at 2,000 ft. per minute. In his own paper on barracks, he provides for ventilation by suggesting hollow floors partly sunk below the ground level for the sake of coolness, as in native forts, but yet having a basement story, in the centre of which thermantidotes or fans could be placed so as to force up through perforations in the floor a continuous current of air. The vitiated air he proposes to get rid of through a perforated cornice at the springings or through the domed roof, a process he would aid of necessity with the ventilating furnaces described by Major de Bude. To the suggestions prepared by the Barrack and Hospital Commission in England, Major Medley does not attach much importance, deeming that they were written with the climate of Bengal in view rather than that of Upper India. The Commissioners, it will be remembered, recommended Dr. Arnott's ventilating air-pump as the best solution of the difficulty, and providing efficient ventilation at a low cost.

As long as transport remains as difficult and expensive as it now is in India, builders will have to rely upon bricks rather than stone in most localities. Hence it is a matter of importance that the best modes and materials for making these, and the best manner of using them, should be well considered. To this end the principal of the Thomason College has conducted some experiments with a view to make coloured bricks; but, so far as he relates, had succeeded only in making black ones. He hoped, however, by comparing English raw materials with native earths, to be eventually more successful. Native bricks are soon made, but they are uncouth in shape, and not uniform in size or thickness. Their dusky manufacturers "excavate a few cubic yards of surface mould from the nearest piece of waste land, and, after wetting and turning it over for a few minutes with their hoes, transfer the mud, pebbles, grass, roots, and all, lump by lump, to a double wooden mould, put it in, strike off with their hands the superfluous clay, then raise the mould, leaving two parallelopipeds of semi-fluid mud adhering to the ground; each moulder completing a daily task of about 2,000. These soon dry in the sun, and are ready on the following day to turn over, and in a few days to be burned, either in rude kilns or clamps." Bricks made in European methods harden so rapidly in this climate that they can be lifted off the floors and stacked on the third day, and placed in the kiln or clamp at the end of a week. The rays of the sun are nearly as hot as the contents of the kiln; there is no occasion, therefore, to keep the kilns closed for any length of time. They are generally opened the day after the stacking is completed, the embers raked out, and the air freely admitted; but five days elapse before the bricks cool down.

The rivers appear the most formidable antagonists the Anglo-Indian engineer is called upon to cope with. The velocity of the waters at certain seasons, the quantity of silt they carry with them and deposit in inconvenient places, floods with their deposits and droughts, are difficulties of daily occurrence. The Mahanuddy's waters annually endanger a population of 35,000 people at Cattock. Captain F. D. Brown, assistant engineer, contributes an account of the works undertaken to prevent the recurrence of this annual threat. Mr. Sibley made observations on the Jumna which show that at its average floods this river rises 40 ft. above low water; but that it occasionally rises to a height of 50 ft. above this level. In 1861 it ran at this height for twelve days, at a rate of eight miles an hour. Its force may be to some extent realized by Mr. Sibley's calculation that the discharge per second must have reached the enormous amount of nearly of 1½ million cubic feet. Lieut.-col. Tremenhere has made the Indus his peculiar care, ascertaining the relative amount of silt in the summer and in the winter; the amount of solid matter at different depths; the velocity of its waters. What with filtering, drying, weighing, passing much of his time in a boat anchored at point after point in the river, fishing for water from different depths in curious bottles, the gallant colonel must have reaped peculiar experiences. The results respecting the proportions of silt are curious: "In water taken on the 23rd November, at 9 ft. from the surface, there was more silt than in water taken within a couple of minutes at the same spot from a depth of 11 ft., and more in water taken on the 24th November from a depth of 8 ft., than from a depth of 12 ft." It is a subject fraught with much interest to reflect upon the difference between the modes of the two movements of the Japhetic race in their reversed strides across the terrestrial globe. In old times the faces of its most enterprising tribes were turned westwards with no appliances. They scaled mountains without roads, crossed rivers without bridges, cultivated countries without inplements, and hunted wild beasts without rifles, gradually extending over tract after tract. Now, after centuries of civilization and accumulations, our bravest and best turn their faces easternwards towards the old Asiatic home, armed with every appliance, informed of millions of facts garnered up in the experience of ages. Is the difference in the results effected commensurate with our great advantages over the early pioneers? Are we sure we do not waste our best opportunities on inadequate objects? Are we doing all we possibly can to temper the climate? It is allowed that cultivation and drainage materially lessen intensity of cold; can nothing be devised to lessen intensity of heat? Taking it for granted that evaporation, as supplied by the wet tatties, is of some avail in houses, should not irrigation be looked to and pursued as the best hope of Hindostan, and every effort strained in that direction? In the enormous volumes of water, bursting all bounds, turning the rivers into straits, nature seems to have furnished the only requisite not in the power of man to provide. The Indus sometimes rises nearly 100 ft. above its usual level. Too much water in one place is a misfortune. The surplus intercepted and conveyed in other directions would be a blessing. Occasionally rumours break upon the ear, of Government irrigation schemes. Let us hope this generation will not pass away before we see the chief cities of Hindostan rivalling Holland in the number of their canals, and the burning plains intersected with waters. What has been done can again be done.

Details of the building of police-courts, clock-towers, oil-mills, out-posts, the rates of work in Bengal, Hyderabad, the North-West Provinces, and the Punjab, form further features in the mass of information Major Medley has got together. There is also a good indication of the rate of speed at which public improvements are carried on in two papers on the construction of the tunnel now in course of progress under the Indus at Attock. We have said that the waters of the Indus rise sometimes nearly 100 ft. They have done so frequently within remembrance. But at Attock there is nothing to prevent them rising to a height of 150 ft. as the channel there narrows. In making designs for a bridge over the river at this point, Colonel Crommelin elevated it 96 ft. above the low-water level. But this was deemed insufficient, for as Lieut.-col. Robertson remarks in his proposal to substitute a tunnel for it, "this only gives 4 ft. clear of a known flood, only twenty years back, while the land-arches would be all closed, even with a flood such as that of 1841: the next flood may be 120 ft., and what becomes of the bridge? These floods bring down trees, stacks of corn and fodder, huts, cattle, &c.; so that even a clear space of 10 ft. between the river level at the lowest point of the trussed railing or crown of arches would not save the bridge from being carried away." The tunnel scheme was submitted by Colonel Robertson in 1859. It was commenced in March, 1860. In 1861 it was being carried on, "most vigorously" with the "greatest spirit," reported the Lieutenant-Governor of the Punjab, by a party of *gallant Muzbee miners, aided by six European miners.* With this force we cannot be surprised that it is only now "partly executed." If this be the usual rate of progress, it will certainly be some time before we effect any appreciable result in our Asiatic possessions. Even the simple art of road-making is magnified into a difficulty, by Asiatic circumstances. Writes Colonel Cowper,—"There are numerous differences of opinion on the subject: one executive engineer reverses the system pursued by his predecessor; almost all proceed empirically without any fixed rules, and thence results a diversity of practice, of which much must be wrong, and cause a considerable loss of money." These professional papers will, doubtless, be of great service, both in bringing vividly to thousands of minds points that require thoughtful consideration, and in causing happy suggestions; for, to apply a homely saying to a distant clime, there is no one who can tell the world so well where the shoe pinches as he who wears it.

BREADTH OF LIGHT AND SHADOW IN ARCHITECTURE.*

I WISH now to say a few words on art principles in general, and specially with regard to architecture. Art we presume to be under most of its aspects an imitation of nature. Now, nature proceeds by fixed laws. What, then, are these? Uniformity of plan is the first great rule, or, as the poet beautifully says, order is Heaven's first law. Sir Isaac Newton, in the "Principia," in a remarkable passage quoted by Professor Owen in his book on the "Nature of Limbs," remarks on what we may call the bilateral symmetry of nature. Two eyes, two ears, two hands, two feet; each side of the body of animals corresponding exactly to the other. Such is the plan;

* By Sir Walter James, bart. See p. 342, *ante*.

and if we pursue our inquiry into vegetal nature, each flower, each leaf when bisected, cut into equal parts, produces two parts essentially the same and both perfect. Again, we have in the various segments of animals an analogous uniformity. Thus we see the limb is in all its features the same, whether it be an arm or a leg, and botanists tell us that a flower is but a highly developed leaf. Now, to carry this law into the arts, we see that symmetry or what may be called uniformity of plan is the first great law. If we bisect a Doric column, or a Doric temple, each side or each part exactly answers to the other; and, in common language, the phrase that a thing is "lopsided," or "all on one side," is but another form of expressing our sense of its ugliness — an ugliness arising from imperfection because the parts do not correspond.

God's handwriting is seen upon the surface of nature: if we want a test of what is true and beautiful in art, we must ask ourselves, is the handwriting the same? This, I think, is the best and only sufficient test of the beautiful. What, then, are the characters? This uniformity or symmetry of plan is the first. But underlying this principle, not opposed but rather in subtle and exquisite harmony with it, is the law of infinite variety, an adaptation of means to ends as marvellous and beautiful as its correlative law of symmetry. Buffon, the great French naturalist, has well remarked, "It is only by comparing we can judge, and our knowledge turns entirely on the relations that things bear to those that resemble them, and to those that differ from them," and he adds, by way of illustration, "if there were no animals, the physical nature and structure of man would be far more incomprehensible than it is." May we not in like manner say that if we had had no nature we could have had no art; and that without going to nature it is impossible to understand the true principles of structure. What, then, is this law of perpetual and never ending variation? I will put it in a twofold light. 1st. The adaptation of means to ends, or what may be called creative ingenuity. 2nd. The principles of variety and contrast, as being, *per se*, an element of beauty in the physical world, and, therefore, essential to the beauty of any work of art.

On the first topic, the adaptation of means to ends, and the skill with which each part is made to play its due proportion or share in the wondrous whole, I know of no better illustration than the skeletons of animals. It is here that the most interesting and beautiful evidences of adaptation to ends, as well as unity of plan, have been discovered.

No study could, I am persuaded, be more useful to the architect, as well as to the artist. The principle of the arch may be said to be the leading idea of the bony framework. Our skulls are arches; our feet are arches; our bodies form arches—for what are the ribs and concomitant vertebræ but an arch? The whole spinal marrow, as it descends from the brain to the pelvis, is enclosed in a strong, compact arch, to which the spines of the back act as a powerful keystone. But if the principle of the arch is to be found in the body of every animal, we may discover likewise that of the column, or vertical support. No superfluous material is here wasted by the great Creator. The limb of the elephant is well proportioned to sustain the enormous weight of his unwieldy yet majestic frame; while that of the camel or giraffe is slender, elegant, and bony, just in proportion to the superincumbent mass that presses upon it. Look, too, at the feet of the camel and the elephant. The foot of the elephant, like the instep of the human being, is arched in its structure, calculated to support weight. The foot of the camel is not arched at all, but flatly, horizontally, spread out, with soft, large cushions at its sides, to prevent the animal sinking into the sand of the desert. But Nature is as thrifty an architect in the choice of her materials as in the forms in which she disposes them. I select the following passages from a work of Owen:—"The bones of fishes are spongy in the interior; and where ossification takes place it is restricted to the surface of the primary gristly mould. The bones of the turtles and sloths are solid; but in the active land quadrupeds the shaft of the long bones of the limbs is hollow, the first-formed osseous substance being absorbed as new bone is being deposited from without. The strength and lightness of the limb-bones are thus increased, after the well-known principle of Galileo, exhibited by means of a straw picked up from his prison-floor, to answer a charge of Atheism brought against him by the Inquisition. The bones of birds, especially those of powerful flight, are remarkable for their lightness. The osseous tissue is, in fact, more compact than in other animals; but its quantity in any given bone is much less, the most admirable economy being traceable throughout the structure of the bird in the advantageous arrangement of the weighty materials." Then, after illustrating this by showing how heated air permeates the bones of the bird, he concludes,—"The bones of birds are filled with rarefied air. Their extremities present a light, open net-work, slender columns, shooting across from wall to wall, these little columns being likewise hollow."

Every book that is written on Natural History gives us something of the same kind. Now I hear, as it were, the word "Question, question," mentally uttered by my auditors, as if such arguments were foreign to my lecture. I must excuse myself by saying that, as Nature does everything with a clear and definite purpose, or final cause, the architect ought to do the same; and that the vegetable world as well as the animal kingdom offer most excellent subjects for the study of the young architect,—subjects hardly secondary, if at all so, to the study of the works of man, the temples of Greece, or the Mediæval cathedral.

The principle of the hollow column, which I alluded to in the earlier part of my lecture, though well known to the engineer, has seldom been brought into use by the architect. Mr. Butterfield, indeed, has used it in the Church of St. Alban, where the decorative columns are of hollow pottery, not unlike draining tiles. The effect is pleasing. I observe, too, that Mr. Barry has used the same contrivance for ornamenting the corners of some schools in Holborn, and has adapted these hollow tiles to convey water from the roofs of the buildings. But it is when we come to the higher region of the air (like the bird) that we may naturally expect to see bird-structure, if I may coin a word, imitated. What is the spire itself but a hollow tube? and it is in the building of spires that hollow tubes, as I conceive, might very effectually be introduced, as being good examples of a combination of lightness with strength, and enabling us to get what we as English builders are very defective in. I mean altitude of proportion. This quality is necessary to grandeur, particularly in the Gothic style, and in edifices dedicated to the glory of God.

It is then in that variation which admits of the special adaptation of each form to the purpose for which it was designed, that we see the wisdom of nature, or, in other words, the wisdom of God. Why should not the same law guide us in our buildings? Pugin has well defined architectural propriety to be that the external and internal appearance of an edifice should be illustrative of, and in accordance with, the purpose for which it was designed. The animal, the tree, or the flower, each has its own character. So should the building designed for God's glory, the collegiate establishment, the town-hall, the mansion, or the cottage. I need not point out how contrary to this wholesome principle is the idea of having a church like a Greek temple with a Doric colonnade, a collegiate establishment like a large hotel, a town-hall like a theatre, a gentleman's house like a barrack, or little better, a Gothic abbey, or an entrance-lodge, decorated with an Egyptian Sphinx. There is a place in Nature for everything, and everything should be in its place.

Nor is this rule less applicable to small than to great things. It gives true simplicity and breadth of character, and cuts off useless ornamentation. It is allied to the equally important principle that ornament should never be introduced for its own sake, or as we may express it, for "mere show-off," but should be confined to the decoration of construction. We never see anything in nature overcrowded. Everything is subservient to some purpose, and beauty is superadded. How different is this from the faulty decoration of the upholsterer, who determines to do the thing in the Gothic, the Greek, the Italian style, or in what may be called a skilful medley of the worst features of all these, the upholsterer's style: crockets and finials project from every corner; here the claw of a beast, there the beak of a griffin; here a sideboard supported by a mahogany eagle, there a serpent twisting gracefully round the table's leg. Where, I ask, are simplicity and breadth in these things? Truly did Mr. Pugin remark that a gentleman could hardly walk through a drawing-room fitted up in this style without danger either to the furniture or to his own clothes.

Mr. Pugin remarks, "Notwithstanding the palpable impracticability of adapting the Greek temples to our climate, habits, and religion, we see post-office, theatre, church, bath, reading-room, hotel, Methodist chapel, and turnpike-gate, all present the eternal sameness of a Greek temple outraged in all its proportions.

A few words may be added on variety, not merely considered with a view to the various purposes for which buildings are designed, but as in itself a principle of beauty and a main source of the picturesque. Inequality of forms and quantities is necessary to make up an agreeable building or picture. It has, I think, been remarked with great truth, that the effect of the opposition of lines and the force of contrast is more noticeable in a work of art than in nature; for in the former the various objects strike upon the retina at once, in the latter they are dispersed over the landscape. A defect may be observed in a photograph, which would not strike the most delicate or critical eye in nature. To show what I mean I have taken the trouble to draw out, as a diagram, the hand of a man and the hand of a monkey. Teleologically, that is, with the view of studying the purpose for which each is framed, they are equally well adapted; but in point of variety of form, observe, I beg, in the human hand, with what delicacy and variety the length of fingers is gradated; how much more subtle the difference is in the size of the finger joints, and how this infinite variety of size contributes to beauty. The same may be said of the graceful and swelling curves which bound the outline of the form of man.

I will, just for example's sake, give another illustration, from the floral kingdom,—a rose and a convolvolus. The forms are equally lovely, yet both dissimilar; and if we examine the parts with care, we find no two leaves, no two petals, no two parts of any description like their fellows. The flowing curves of the floral kingdom may be a study more congenial to the painter or the sculptor than to the architect, who deals, in general, with stiff and unyielding materials. In the midst, however, of these lovely curves, within the calyx, and often round the corona of the flower, there are exquisitely symmetrical forms,—hexagons, pentagons, octagons,—every conceivable geometrical form which, in the composition, for instance, of decorated windows, would be most serviceable to the architect. From their illuminated manuscripts, from their being great farmers, &c., we may well believe that the monks of the Middle Ages not only studied botany, but adapted it to their building purposes; and if we may trust the analogies of language, one beautiful feature in our Gothic cathedrals is the fruit of this research. I allude to the rose window.

I exhibit as an illustration of the same principle two houses of the commonest street type; No. 1, entirely unornamented; the second such as seen in a better kind of street, with at least a show of taste upon it. Why is one superior to the other? Both are equally symmetrical; but in No. 2, superadded to the symmetry, there is a show of variety,—of variety in the forms, and variety in the quantities. I should be glad if any one could point out any other difference to account for the extremely different effect of the two designs upon the eye. The next example I exhibit is from Welford Church, Berkshire. These elevations are taken from a print, and are both somewhat modified. In No. 1, the height of the tower and spire exactly coincides; in No. 2 it is different. Referring, in the next place, to the segments of the tower, we find them in No. 1 precisely equal; in No. 2, quite unequal. The uneducated, even, would, I imagine, see that No. 1 is superior in all respects to No. 2. Nor can I assign any reason for this superiority, unless it be the application of that law of variety which, as I apprehend, arises originally from the necessity of resorting to various means for various ends, as the teeth of the carnivora are for one purpose, those of the rodentia for another; but which becomes, secondarily, a principle or law of beauty, independently of any purpose which the Author of nature may have had in view. I exhibit a drawing of an arch in Canterbury precincts. The point here is the exquisite manner in which vegetation accommodates itself to buildings. Architects are hardly sufficiently alive to this point. A grass lawn, such as England, and England alone, can boast, is the most beautiful platform from which any building can spring.

Trees, shrubs, and ivy—even dangerous ivy—have their beauty, and are valuable adjuncts to architecture.

I would now, before concluding, call your attention to the diagram above my head, in which I have ventured to propound my general views on the subject of the arts and architecture particularly. You will observe, it is divided into three heads—form, height, and shadow and colour; or we may call them outline, substance, and colour, for light and shadow are the means of giving rounded form.

Under the head of "Form," you will observe that I have taken the Doric temple as the example of symmetry, and the Gothic cathedral as that of variety in form. They are perhaps as good as any we might chance to hit upon. I would observe, however, that the symmetry of the Doric column is diversified by an almost infinite variety, and that the variety of the Gothic minster is modified by a large share of symmetry. Perhaps it would be fair to assert, that in Gothic art the principle of exact correspondence of parts is changed for that of a general balance between "the two sides, so to say, of the picture." This is well exemplified by the position of the central tower in Canterbury and other cathedrals. To the east we always have the most interesting part of the building. Here, owing to its sacredness, the largest amount of decoration is always to be found, both externally and internally. Deep shadows throw out the surrounding chapels, and where terminated in a "chevet," this portion of the edifice is generally full of interest. To balance this mass of decoration, we have the great length and quiet stateliness of the nave; yet even these fail to give their due share of importance to the western parts of the building, for the typical completeness of which two western towers are an absolute necessity. I offer my humble adhesion to Mr. Fergusson's view, who calls Lichfield, with its central and two western spires, though small in size, a thoroughly artistic group. Canterbury, of which I exhibit a lithograph only moderately well done, is a good deal too long.

If we recognise in any measure the truth of the principles developed in this lecture, we shall in some degree, at least, understand why we are greater and yet less, less and yet greater, than our ancestors. As has been most eloquently remarked by the Dean of Westminster, "We cannot dispense with the mighty past, even when we have shot far beyond it." Those who follow cannot be as those who went before. Mediæval days, with their exalted faith, their noble chivalry, their rude violence, have gone, and cannot return; yet they have left a legacy of enduring value. Their castles, cathedrals, and abbeys come down to our days, and preach to us in stones, the best of sermons. Truly it may be said of those grand old monks that they laboured, and we have entered into their labours. The comparison instituted by the eloquent writer alluded to, between Elijah and Elisha, is not inapposite. The rude vigour of primitive times gave way in the latter to winning arts and healing arts, and gentle words of social and peaceful intercourse." The stream no longer bounds from rock to rock, but flows on in tame fields,—in a channel, if less ruggedly beautiful, wider, and perhaps more beneficent. It is the same with regard to the arts. Our great works are few. Be it so; but do not these very great and magnificent buildings of former ages tell another tale, viz., of labour unremunerated; of large populations pressed down by serfdom; of education little spread; of one order, and one order alone, that of the clergy, absorbing in itself, not merely all that was spiritually good and great, but even all that comes under the term of temporal prosperity? Let us hope, then, that the work of architecture, if carried on by men of inferior genius to those who decorated the Parthenon, or raised to the skies our noble minsters, may be practised in a spirit certainly of wider usefulness, and with aims not less beneficent.

THE TRADES MOVEMENT.

London.—A crowded meeting of delegates from the London carpenters and joiners was held on the 16th, at Bloomsbury, for the purpose of receiving reports from the delegates as to how far the various building firms have acted upon the resolution of the associated employers to pay the advance to 8d. per hour to the men on Saturday last. It appeared that most of the leading firms in the trade had carried out the resolution and paid the advance; which, however, other firms had refused on various grounds. The delegate from Perry's stated that the men had suspended work since Monday last until they could obtain a definite reply from the employer. After some discussion it was decided to deal with Perry's firm first, and the following resolution was adopted unanimously:—

"That the men in the employ of Mr. Perry be requested to wait upon that gentleman to-morrow morning with a list of those firms who have given the advance, and in the event of Mr. Perry still refusing to pay the 8d. per hour, this meeting empowers the men at once to leave his employ, and pledges itself to support them in so doing."

It was also resolved that the men in the other firms who had refused the advance should at once make application to the employer for it, and report the result.

Maidstone.— The carpenters and joiners are on strike, as well as the bricklayers, for a rise of wages. The movement originated in a demand of an advance of 6d. a day, to which the builders agreed, if the hour system were adopted. This system the men agreed to adopt if 6½d. an hour were given. The masters refused, and the men struck work.

Poole. — The carpenters and joiners have struck for 24s. per week, instead of 21s. as hitherto. The masters unanimously resolved that no advance of wages be agreed to. Some of the men have returned to their work, and others have left for neighbouring towns.

Bath.—The masons have had a rise of 3s. per week conceded to them by their employers without a strike.

Wolverhampton.—The operative painters, 61 of whom are members of the Manchester union, have turned out on strike for a rise in their wages of 2s., viz. from 26s. to 28s., and certain other advantages. Endeavours are being made to induce them to submit the matter to arbitration.

Birmingham.— The bricklayers have refused to abide by the decision of the umpire elected conjointly by themselves and the masters, and have struck work. This does not look well for the hope of settling all disputes by arbitration. It is when the umpire decides against either workmen or masters that the sincerity of their adhesion to the principle must be tested. The bricklayers, however, say they did not consent to leave all disputes to arbitration. Nevertheless, in the case in question, the men gave notice of a demand for a rise of wages of one farthing an hour. The masters agreed to this proposal on condition that the men should work till two o'clock on Saturdays. This was objected to; and the dispute was referred to arbitration. Both masters and men agreed to this, and both sent representatives to the meetings, and both accepted Mr. Lloyd as umpire. After hearing the case stated on both sides, Mr. Lloyd gave his decision that no sufficient reason had been presented for the proposed increase, which decision left the old rules unaltered for the current year. If Mr. Lloyd had voted in favour of the men, the masters would most probably have accepted his ruling, and given the proposed advance. It is to be regretted that the men have not done so.

Liverpool. — The strike of the house carpenters and joiners is virtually at an end, the men's demands having been agreed to. The London and North-Western *employés* at the Liverpool goods station have asked and obtained an advance of wages. The sailors, sea-cooks, and stewards of Liverpool are agitating for a rise in wages; and the girls employed in picking waste cotton have struck for a rise of 2s. a week, and obtained it, after walking in procession to a sort of "women's rights" demonstration on the flags of the Exchange, which no doubt frightened the great cotton merchants within into an unconditional surrender.

Preston.—The stonemasons, flaggers, slaters, and joiners here are on strike—the first wanting a reduction in the hours of labour, the second and third an alteration in their rules, and the fourth more money. The masters have entered into a union to stand out against the demands of the workmen.

Bradford. — Several hundred iron-moulders have struck work here for an advance of wages. They have recently received 30s. per week, and they seek an addition of 2s. per week. Two or three firms have yielded, and their men have returned to work. The majority of the masters, however, decline to give the advance. Other branches of the iron trade indicate signs of uneasiness, other workmen having given formal notice for an advance during the present month. The stonemasons in this district received an advance of 3s. per week on the 1st of May, making their wages 30s. per week for nine hours' work per day. They had given their masters six months' notice of their desire for an advance.

Carlisle.—The Carlisle Builders' Association have passed the following resolutions:—

"That this association do agree to a revision of the trade regulations and rates of wages, by delegates appointed in equal numbers from the masters and masons of Carlisle, with a disinterested person to act as chairman and umpire.

That this association is at all times willing to receive and consider any proposal from the operative masons of Carlisle with a view to the settlement of the strike."

A copy of these two resolutions was given to delegates of the masons at their request, to lay before their lodges. The painters have consented to accept the hour system of payment, if terms can be agreed upon. The masters offer 5d. an hour, but the men want 6d., and so the matter rests. The joiners are still out, with no immediate prospect of a settlement of the dispute.

Galashiels.—A great majority of the masons have struck work in consequence of the masters reducing their wages one halfpenny per hour. The building trade has been unusually brisk this spring. The plumbers have obtained a rise of 2s. per week, making their wages 23s.

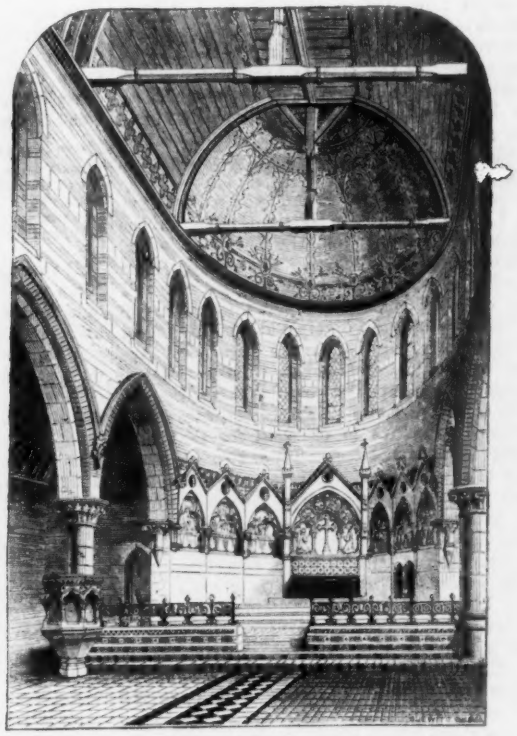
Paisley.—The sawyers and woodturners have resolved to petition their employers for an advance of ten per cent. on the present rate of wages.

Limerick. — The tailors here have struck against the women, because the masters employ them to sew the lighter kind of garments! And this in the "land of chivalry" too! Moreover, they say they won't go back to work again until all the poor women are discharged.

ST. SAVIOUR'S CHURCH, HOXTON.

ON Monday week, the Archbishop of Armagh, acting for the Bishop of London, consecrated the new Church of St. Saviour, Hyde-place, Rosemary Branch Bridge, Hoxton. The church is from the designs of Mr. James Brooks, best known as the architect of St. Michael and All Angels, Shoreditch. It is built of brick, with stone bands, &c., in the First Pointed style of Gothic architecture, and of rather a continental cast. Placed among tolerably lofty houses, it vindicates its own height, and is in this respect quite of the best type of the town church. The general ground-plan is a parallelogram, of about 98 ft. by 66 ft., divided into nave and aisles,—the nave terminating in a semicircular apse, the north aisle being shortened by the length of the vestry, and the south ending in an organ chapel. Five pointed arches separate the aisles from the nave, four bays belonging to the nave proper, and the fifth, which is more contracted both in height and width, belonging to the *quasi*-chancel. Proper chancel there is none, for the shortness of the site from west to east is such, that to give dignity to the building, the architect has been compelled to make the whole roof of uniform height. The false-chancel is formed by raising into a dais the last few feet of the nave, to the height of some 35 in. in its extremest elevation, and by a ceiling over, with planed boards, the rafters of the half-conical roof of the apse. The effect of this arrangement in a building which rises about 75 ft. inside from the pavement to the apex of the roof is exceedingly fine. The architect is to be congratulated on the acoustic properties of the building. With a full or scanty congregation, during singing or preaching, the church is remarkably good for sound; and though the laws of applied acoustics be obscure, we may hazard a conjecture that the wall of the apse, solid in its lower part for some 30 ft., till it reaches the clerestory lights, which run round the apse as well as the nave, and then the concave smooth surface of the sanctuary, are not without effect in producing this. The clerestory and roof are effective features of the interior. The clerestory has thirteen lancet windows in the apse, and is continued along the nave in three similar lancets on each side, alternating with four pairs of small lancets, surmounted by a circle, each pair under one interior arch. This arrangement, while it lessens the weight of wall upon the nave piers, also by giving a sort of splay to the windows adds to the light of the whole. The light, being derived almost exclusively from the clerestory of apse and nave (another town church feature), falls with a most pleasing softness upon the congregation below—

Exterior.



Interior View, looking East.

ST. SAVIOUR'S CHURCH, HOXTON.—Mr. James Brooks, Architect.

an effect which is further heightened by two shades of delicate green which tint the glass. The roof is of very high pitch, and of a width at its base of about 30 ft. The rafters, which rise at very frequent intervals each from the wall-plate to the ridge without any purlins, have a very marked effect. In the western gable is a wheel window, consisting of twelve circles enclosing four irregular figures of a circular character; beneath which are two very fine windows of two lights each. This west end seen from the altar-steps is very imposing, as there is a blank wall of brick, necessitated by the external abutment of a building upon it, of some 40 ft. high, and above this and rising to 60 or 70 ft. are the wheel and other windows just mentioned. The blank space thus left affords a splendid opportunity for a wall-painting of the Last Judgment or other subject being introduced upon a panel of the width of the entire nave. The reredos is an arcade of seven arches of Bath stone round the apse, contrasting agreeably with the red brick of the walls. A white marble cross with background of inlaid marble of greenish colour occupies the central panel; and it is contemplated filling the remaining panels with mosaics illustrating the life of the Saviour. The communion-table is a handsome piece of cabinet-work: it is built as a *bonâ fide* table with panels of various kinds of wood, and crosses of teak inlaid in the top, and illustrates what may be done in good architectural taste in contradistinction to the spurious principle of constructing an altar with massive wooden pillars and capitals and arches to support what, after all, is only a slab of wood of a few pounds weight. The choir-stalls are formed partly of old oak taken from the recently rehabilitated chapel of Worcester College, Oxford. Three small stained glass windows by Messrs. Clayton & Bell are placed in the south aisle. There is no font at present, owing to straitened means. Externally the apse and high-pitched roof with its boldly-defined eaves and gutters resting on brick corbel-tables, and the spirelet rising like a sanctus-bell turret and covered with lead and copper, are the most striking features of the building. Great praise is due to the builders, Messrs. Longmire & Burge, whose work appears to be very conscientiously executed. The contract was let for 5,800*l.*; and the expenses of every kind will, we understand, be covered by about 7,000*l.* After the liberal subscriptions of Mr. P. Cazenove, the Bishop of London's Fund, and other societies and gentlemen, about 450*l.* are still deficient. The incumbent, the Rev. J. T. Jeffcock, will be glad to receive donations to the building-fund, or towards the additional decorations required.

THE GERMAN GYMNASTIC SOCIETY, ST. PANCRAS ROAD.

It is the aim of the German Gymnastic Society, established in the Old St. Pancras-road, King's-cross, to afford its members an opportunity for bodily exercise, not only for the sake of healthful recreation, but with a view to render them fit to serve their fellow-men and their country, in all cases where bodily strength, endurance, and skill are called for. A Gymnasium Company have built a hall used by the society, and the interest upon the shares of the company is limited to 5 per cent. Neither the company nor the society has been established with a view to profit, and all the members of the council, as well as the leaders of squads, render their services gratuitously. The first movements for the introduction of gymnastic exercises, in Germany, appear to have been made in the latter half of the last century. The man who had done most in popularising gymnastics was Ludwig Jahn. In 1811 he opened a public gymnasium at Berlin, which was visited by many thousands, boys and men. The whole of the latter enlisted in the army during the war of liberation, and many of the most able fell on the field of battle. On the restoration of peace, the Governments took up gymnastics. It was proposed to introduce them into the schools and the army, but not much was done. A time of re-action set in, gymnastic societies were treated as political bodies, persecuted, and suppressed. The promoters of the movement, however, kept steadily at work, and there are at the present time in that country about 1,800 societies, with close upon 200,000 members.

The German system of gymnastics has been introduced into other countries. A German Gymnastic Society was established in London in 1861 by 170 Germans who subscribed to a foundation fund. All classes are represented, but the mercantile class preponderates. Their hall, of which we give a view, has been built by Messrs. Piper & Wheeler, from the designs of Mr. Ed. Grüning, architect. The apparatus has been manufactured by Messrs. Snoxell, from designs supplied to them. The fittings are as yet far from complete. When all is done about 30 squads of 10 men each will be able to practise at a time. A structure at the end of the hall, not shown, is intended for escalading exercises.

The dimensions of the hall are:—length, 120 ft.; width, 80 ft.; height to the top beam 57, ft. The club-room is 60 ft. by 35 ft. There is also a reading-room. The Society's library contains now 90 works on bodily exercises, and 300 others; 500 volumes are expected shortly from Mr. Brockhaus, of Leipsig.

It is proposed to ornament the hall with busts of celebrated Germans and others, who have worked in the cause of human progress. Jahn's bust, by Mr. Grass, has been completed, and so have busts of Spiess and Gutsmuths, by Mr. Novra. A large clock was presented by Mr. Murray, of the Royal Exchange. Another English member, Mr. Hasluck, intends presenting a clock for the club-room.

The land is held on lease for 94 years at a rent of 42*l.* The building cost about 6,000*l.* exclusive of fittings and apparatus. All the money required, over 10,000*l.*, has been raised. The number of members is about 1,100, the majority being English.

The foundation-stone was laid on the 14th of May, 1864: the hall was opened for use on the 28th of January, 1865. The entrance and other parts are still incomplete.

The president in his last report shows some results of practice worth noting:—

"Our men," he says, "are tested every six months with a view to their distribution into squads. We test the flexors of the arms by requiring them to rise and sink whilst hanging on the rack (horizontal bar); and the extensors by sinking and rising in the rest between the parallel bars. A comparison of the results of two testings affords satisfactory proof of the progress in strength made by our members, though many of them are very irregular in their attendance. The results are as follows:

Rising and Sinking at the Rack.—Beginners rose 0 to 6 times, or on an average 2·4 times, when tested first. They rose 1 to 16 times, or on an average 7·2 times, when tested again after the lapse of six months. Increase of strength, 192 per cent. Our more advanced men rose at first 7 to 11 times, or on an average 10·9 times; after the lapse of six months they rose 8 to 16 times, or 10·6 times on an average. Increase of strength, 28 per cent.

Sinking and Rising at the Bars.—Beginners did it 0 to 6 times (average 3·4) when tested first; 2 to 17 times (average 9·4) when tested the second time. Increase, 169

THE GERMAN GYMNASIUM, ST. PANCRAS ROAD, LONDON.—MR. E. GRÜNING, ARCHITECT.

per cent. More advanced men did it 7 to 11 times (average 9·1) when tested first, and 7 to 18 times (average 12·5) when tested the second time. Increase, 37 per cent.

High Leap.—At the first test the men cleared 47 in. on an average, at the second 55 in. Increase 17 per cent."

A desire for the opportunity for gymnastic exercises appears happily to be spreading in England just now. A gymnasium has been established in Whitehaven. Arrangements are being made for opening one in Reading. In Liverpool is to be found one of the most perfect yet established, the cost of which has been about 14,000*l*. In Manchester they are only waiting to see the result of the movement in Liverpool.

The following observations by a contributor are in place here:—

Living close to a great thoroughfare in a northern district of London, we have often noticed with pain and surprise the large number of wayfarers who are "deformed—unfinished," and either crippled by weakness, want of care in infancy, or by following unhealthy trades. Many have one or two club feet; others are bent in the limbs, on one side: there are stiff limbs, which do not act so well as the artificial ones of clever makers. Many are deformed and stiffened by attacks of rheumatism, and others by paralytic and nervous causes. The bandy legs and rickety state of very young children might be, to a great extent, prevented, by attention to proper air, food, and clothing supply; and in other ways, much of the evil referred to might be lessened by surgical attention to children when in their younger years. Notwithstanding there are facilities afforded for the cure of those imperfections, not only in the Children's Hospital, in Great Ormond-street, but in other of the metropolitan hospitals, where often a simple and not very dangerous operation, with a little care, will prevent the early close of life or the passing of one in a lame and crippled state; still, the opportunity is neglected, and in course of time the deformity is still further confirmed by the sufferers being put to some sedentary employment. This is a matter which requires more thought than has been generally devoted to the subject; and we believe, that if it were better known how easy it is to get assistance of the very best description, at St. Bartholomew's and other hospitals, and also the use of splints and apparatus of different kinds, that but a tithe of the lame would be seen in the streets of our large towns. A considerable number of the cases of deformity which are far too frequently met with arise from accidents, but some are brought upon youths who are sent, at the ages of from thirteen to fourteen and fifteen years, to trades which, in course of time, to a greater or less extent, make the limbs lose their fair and right proportions, and, in addition to discomfort, cause much damage to health. In Sheffield, Birmingham, and some other towns, where many persons are employed in the grinding, polishing, and finishing of tools, a trade which requires both men and women to stand or sit for many hours together in one particular attitude, the muscles get set in a form similar to that which the workpeople stand or sit in when labouring at the bench.

In Clerkenwell a considerable amount of this kind of deformity may be noticed, particularly amongst those who are employed in some branches of the gold and silver-smith, and jewelry trades. There may be seen lads, of seventeen or eighteen years of age, who work at the polishing of gold and silver ornaments, whose limbs have become like the Sheffield grinders, of unnatural and unhealthy forms, and this kind of deformity comes more quickly than many suppose, and extends to various employments. The long-established letter-carrier or deliverer of newspapers gets a form of arm and shoulder which is still to be noticed when he has nothing to carry or deliver. By his particular gait, any one can distinguish a tailor or a shoemaker, in the street; and clever detective and other skilled officers of police can, by certain indications, guess whether or not a man is telling the truth respecting his past pursuits. It is a great pity that crippling of this kind should be allowed, for there can be no doubt that facilities for gymnastic exercises, used properly, and in sufficiently early time, would, to a great extent, counteract the effect of most sedentary trades. Gymnasiums, which could be easily accessible in both winter and summer, at a small cost, would be of the greatest service.

A FIGHT AGAINST GOTHIC.

MR. SCOTT'S DESIGNS FOR THE GLASGOW UNIVERSITY BUILDINGS.

At a meeting of the Glasgow Architectural Society, held on Monday, the 7th inst., Mr. Alex. Thomson, architect, read a paper entitled "An Inquiry as to the Appropriateness of the Gothic Style for the proposed Buildings for the University of Glasgow, with some Remarks upon Mr. Scott's Plans," mainly prompted, it is right to say, by a feeling that the Glasgow architects had been slighted by not being asked to send in designs. We give part of Mr. Thomson's argument as against the revived use of the Gothic style of architecture:—

The Gothic revivalists are fond of catching hold of people by their prejudices. They say that theirs is the national style, and this assertion has come to be admitted almost generally. Yet nobody seems to understand exactly what it means. It certainly had not a national origin; and, although it was practised in this country for some centuries, and assumed national and local peculiarities, the same may be claimed for the Classic styles. But they tell us that it suits the national taste. Now this argument, if it is worth anything at all, might be advanced after it had been proved that Gothic is the best style, otherwise it is no compliment to the nation. We are next told that it is the Christian style, and, strange to say, this most impudent assertion has also been accepted as sound doctrine, even by earnest and intelligent Protestants; whereas it ought only to have force with those who believe that Christian truth attained its purest and almost spiritual development at the period when this style of architecture constituted its corporeal frame. The claims put forth in favour of this style are so multifarious, and the practice of its disciples so conflicting, that it is difficult to get hold of the essential points,—like some of the lower forms of animal existence to which nature has not supplied either the power of defence or the means of escape, but, in lieu of these, has so distributed their vitality, that, when their heads are chopped off, they do not seem to miss them; and as for hearts, they have none. Ever and anon we are called on to admire the constructive skill displayed by our ancient builders. The principle of the arch in its various applications, and the means employed to control the law of gravity in its different directions, are expatiated on as altogether marvellous. Now, all this is consistent with fact, and yet the whole is founded upon an egregious error. Can anything be more absurd than to rear a fabric with the very agents of destruction? Every stone in an arch is a wedge, and every stone upon it is a hammer, slowly, it may be, but surely, driving those wedges home. All the parts in Gothic architecture seem to aspire at standing upon end. Great height and extreme inequality of height, with high-pitched roofs, are its most striking characteristics. The result of all this is, that the inequality of height produces inequality of subsidence in the walls and foundations. The high roof, presenting a great extent of surface to the wind, communicates a vibratory motion to the walls. These roofs are either vaulted with stone, or constructed of timber; but in neither case do they contain within themselves any provision against their natural tendency to thrust out the walls. This is met by the altogether external opposing power of buttresses, at an enormous cost of material; for a modern engineer would, for the same purpose, make a pound of wire go as far as a ton of stone. But perhaps this violent conflict of forces may account in some measure for the favour which the style has obtained with a fighting people like ourselves. Then there are no projecting cornices to protect the walls from rain. In the older buildings there is not even any contrivance for conducting the water from the roofs to the ground; it is merely spouted from the gargoyles in concentrated streams, which the wind blows into the walls. It follows that the water, penetrating the stone and finding its way into the joints, is expanded by the irresistible power of frost. There is not a hair's breadth of motion produced by any or all of these agencies but is inevitably taken advantage of by the ever-vigilant hammer-and-wedge principle of construction. The walls are split by the arches, or thrown off the perpendicular by the thrust of the roofs; and, even should the lofty spire fail to attract a demolishing thunderbolt, sooner or later, in spite of all the opposing power of standing and flying buttresses and counterposing pinnacles, the whole thing finds its way back to the ground from whence it sprang. There can be no doubt of the fact that the introduction of the arch into architecture has strewed Europe with ruins; whilst in Egypt and Greece, except where deliberately injured or destroyed, we have lintelled structures which have stood the test of thousands of years without showing an open joint or any other symptom of decay further than natural disintegration. The simple unsophisticated stone lintel contains every element of strength which is to be found in the most ingeniously contrived girder; so that Stonehenge is really more scientifically constructed than York Minster. There are many more fallacies in connexion with this subject which might be easily exposed, but I go on to consider the artistic merits of the style. In order to the proper understanding of its peculiar characteristics it may be of service to inquire into the principles exhibited in other styles of architecture and in the appearances of nature. There are two classes of objects in nature which, while merging into each other at the middle, are very distinct at the extremes, and which for want of more definite terms may be designated as forms and effects. The first includes the whole animal kingdom and a portion of the vegetable, such as leaves, flowers, and the like. The second includes trees, rocks, hills, clouds, and landscape in general, and there is more or less beauty in all. In the first class we have certain typical forms of which all other forms are varieties. By means of a mental faculty common to us all we have no difficulty in discriminating between inferior and superior forms, and according as we cultivate this faculty we are enabled to determine which are the most perfect. These again suggest the ideal, that is, the highest order of beauty which the imagination can conceive. The distinctive characteristics of the higher class of animal forms are that each is symmetrical as a whole, and that all its parts are symmetrical, and that all its parts bear some precise proportion to each other and to the whole. The second class of objects embrace irregular forms, such as trees, rocks, and hills, or combinations of these with effects of colour and light and shade. These constitute what is termed the picturesque, but although this class is in itself a source of much pure delight, it is manifestly inferior, in so far as it wants the ideal quality, while the first contains both. The greater comprehends the less. The higher classes of animals, from the perfect mechanism of their structure, are capable of the most diverse and graceful motions; and their members, though few, may be disposed in an almost endless variety of combinations. This is the case even with single individuals, but much more so in groups. Some people imagine that the rules of architecture are arbitrary, that they have been invented by certain pedantic people in olden times, and that it becomes men of an independent turn of mind to set them at nought; but the fact is, that the laws which govern the universe, whether æsthetical or physical, are the same which govern architecture. We do not contrive rules—we discover laws. There is such a thing as architectural truth. One man may make an endeavour to embody an idea in form; and another, recognising his intention, may take it up and disencumber it so far of extraneous matter. A third may purify it still further, and so on from generation to generation, until, purged of every particle of useless material, and adjusted in all its portions, it becomes for all time a typical form—a perfectly realised idea. In like manner, certain combinations of forms and lines are felt to be harmonious by all who have sufficiently cultivated their minds in this branch of art, and any alteration of those forms or those combinations is regarded as a departure from the truth. These are characteristic of the ideal styles of architecture, as we see them gradually developed in the noble series beginning with the dawn of the human intellect, and diffused over distant parts of the world,—in Central America, India, Syria, Egypt, and reaching its climax on the Acropolis of Athens, in conjunction with, and as one of the most splendid and most enduring exponents of that race which raised human attainment in almost every department to a degree of excellence which has been the envy and admiration of all succeeding ages. Although the lineage of Gothic architecture may be traced through various stages back to the Greek, yet it is of all styles the most opposite to Greek architecture; and the most opposite of all is the English-Gothic, which, as it was practised in the fourteenth century, had lost nearly every

trace of classic tradition. After the extinction of the Roman power in the north of Europe, civilisation and learning sank to a very low ebb; but by-and-by affairs became more settled—tribes were grouped together into powerful kingdoms, and energies which had hitherto been almost exclusively devoted to the sports of the field and to warfare, now sought and found other channels; the influence of the Church began to be felt, and places of worship came into demand. There was not much art visible in the remains of Roman architecture in these later times, but, such as it was, it served as a starting-point, and, partly aided by a few notions imported from the East, these "awful fathers of mankind" took to shaping their thoughts in timber and stone in the best way they could. They were by no means hampered with knowledge, as we are; their shelves were not groaning under the weight of books about everything as ours do; but they had the powers of imagination in great vigour, and they could not choose but receive impressions from the scenes amid which they moved. The material for making silk purses was evidently awanting here, and so the product was, as might have been expected, somewhat rough and homespun. The Gothic, in its earlier forms, seems to embody the spirit of the woods—not the outward semblance, as some say, but the habit and the character. Everything seems to grow; a kind of forest life pervades the old grey piles—buttresses terminating in unambitious pinnacles, which look as if the principle of growth had only paused for a time; sturdy mullions, gnawed by the tooth of time, but still vigorous, spreading out or interlocking their branching limbs to bear up the superincumbent arch, but without the least appearance of effort, as if habit had made the labour light. If we pass the deeply-recessed doorway, with its alternate shafts and mouldings, and enter the interior, we see the same unrestrained freedom about all its parts, the same look of staid animation, as if it had taken a long while to grow, but might grow a long while yet. Still, forest-like, it reminds us of stately trunks and over-arching branches—of sunny glades and gloomy recesses. The light streaming through the stained glass is suggestive of leaves and flowers, while the gloom is associated with lurking terrors of wolves and hobgoblins. The eye falls here and there upon strange, root-like combinations of crooked limbs, presenting a preponderance of knees and elbows, with grotesque faces distorted with pain or grinning with hideous laughter. The style is essentially romantic and picturesque—rather pleasing than instructive, rather interesting than excellent. While it is allied more to the landscape than to the figure department of art, it lacks the perfect freedom of the landscape; stone and lime are not so pliable as colour on the canvas. On the other hand, it lacks the highest qualities which are to be found in figure-painting or in sculpture. The principle of design is not that which we see in the superior orders of the animal kingdom, where every limb and feature is not only symmetrical in its own form and proportions, but stands also in harmonious relation to every other part and to the whole. The ideal element is nearly or altogether absent; in the minor features there is no attempt to ascertain and fix the true symmetrical proportions of any typical form, but instead of this the tendency is to run into numerous imperfect varieties. Nor is there any very decided approach to fixed harmonies in composition; as the forms may be longer or shorter, broader or narrower, so the masses and spaces may be greater or less without appearing to be inconsistent. The principle of design is somewhat akin to that which is observed in trees and such like forms, but limited in its application by the demands of utility, and the nature of the materials employed; it does not seem to stand upon the earth, but to spring out of it. We have the effect of trunks and branches in the mullions and traceries of windows, and in the piers and vault ribs of the interior. In good Gothic the detail multiplies as it ascends, and one part seems to grow out of another. It resembles the lower forms of nature also in seeking for diversity rather than in aiming at unity. This principle can be carried out only by the sacrifice of the higher manifestations of truth and beauty: in order to conceal the crudeness of one form others are brought in to distract the attention, and by way of compensation for harmonious combination the element of variety is introduced. In some cases every bay or compartment has something peculiar in its treatment, which demands our notice on its own account. It will also be observed that these old builders did not feel themselves under any obligation to make similar things exactly alike. The individual workmen seem to have been allowed considerable latitude, and introduced more or less slight variations into features which we would expect to find the same, such as occasionally making buttresses of unequal height and projection, chamfering some and leaving others square, placing openings a little off the centre line of the spaces in which they occur, breaking the continuity of lines, and doing many other capricious things which, although in all probability mere accidents, do at the same time serve to interest us, partly because we are puzzled to account for them, but also, whether intended or not, they serve to give intricacy to the design. Moreover, the eye, taking in several objects nearly alike but yet not the same, and the various figures overlapping, mixing, and uniting in one on the field of perception, give a softness of outline which they would not otherwise have. Then, there is the element of irregularity of plan and outline; towers, spires, and pinnacles break the general mass upwards; porches and other accessories lead the line downwards to unite it with the ground. Some of these adjuncts project considerably from the general plan, and serve the purpose of foreground masses to the rest. By all these contrivances and accidents an impression of multitudinousness and incomprehensibility is conveyed to the mind. Our own cathedral was completely deprived of this effect by the removal of the western tower and the consistory-house, and from the unusually small projection of the transept, the view from the south is now extremely tame as compared to what it was formerly, and the apparent size of the edifice very much curtailed. But Gothic architecture does not express greatness; it is only grand where it is actually of large dimensions. Small Gothic buildings are not impressive unless begrimed with dirt, or in a dangerous state of dilapidation. Indeed, these last-mentioned qualities have a great deal to do with the romantic interest which we associate with old Gothic structures. The effect of breadth produced by blackness, and the softening influences of decay, cover many of the defects inherent in the style. Suppose Alloway Kirk to have been put into a tidy state of repair, and painted in fresh stone colour, Tam O'Shanter and his grey mare Meg would have passed it without a thought of ghaists or witches. So would it be with any moderately-sized Gothic erection. An illustration of what I have stated may be seen in the portions of Glasgow Cathedral which have been restored; for although the new stone was carefully blackened to the tone of the old, no means were used to soften the angles, and so the whole of the west front is most painfully hard and forbidding, and appears in very striking contrast to the scarred and weather-worn aspect of the old work. But while the forms and combinations hitherto used in Gothic architecture belong to an inferior order, it is evident from the nature of the style that they must ever remain so. This will readily be seen when it is considered that the shape of the openings constitutes the main object in the system, to the total subjection of the solid parts. These openings consist of certain geometrical perforations in the walls, intricate and curious enough in their various combinations, but utterly incapable of the delicate refinements with which solid forms may be treated. The patterns of the windows being either strong black or white, according as they are looked at from without or within, any attempt to modify the solid parts would at once be detected. They are, therefore, mere parallel spaces of wall between the windows, or as tracery, mere lines of uniform breadth separating the different shapes from each other. Then the extreme definiteness of these shapes, and the strong black or white in which they appear, calls for equally strong mouldings to correspond, also necessarily composed of the more common geometric forms—ropes and fillets brought out in striking relief by deep ruts emulating the blackness of the windows. There is an inveterate tendency in detail of this indifferent sort to become redundant, for, as I have already stated, the readiest way of distracting the attention from the defects of one crude form is to place two or three cruder forms beside it. If we compare a Gothic flank with a colonnade, it will be observed that there is a most essential difference between the two things in the principles upon which they are designed. In the Gothic the element of height is chiefly developed or suggested; every particular bay is framed off from its neighbour by buttresses, and requires to be examined by itself. The articulation of its parts leads the eye upwards over the parapet to survey a desert of slates or some other mean kind of roofing, and down again to the earth. The perceptive faculty thus gathers a number of separate impressions as it goes from bay to bay, the mixture of which leaves an undefined and more or less confused general impression on the mind, the effort to unravel and arrange which is to many people a pleasing exercise of the imagination. But the element of height is confined within the moderate limits of practical construction and usefulness, so that the Gothic is altogether unsuitable for buildings of great extent, because when it assumes the horizontal form its different parts cease to have any apparent relationship to each other, and become more like a little town than a great building. In a colonnade or façade, the element of length is developed or suggested, and it will be readily perceived that there is no single building or combination of buildings, however great in extent, to which this element does not apply, and which with proper treatment would not be enhanced in dignity in proportion as it is prolonged. I may refer to the magnificent architectural compositions of the late John Martin in illustration of this. A comprehensible number of columns are arranged in a compartment, then a feature projecting outwards and upwards is introduced; the columns are continued through and beyond it to the next feature of the same kind; these are repeated as often as they can be comprehended, and a feature still larger is brought in, to be repeated at greater intervals; and so on almost indefinitely; the columns are connected by their stylobates below and their entablatures above; while the other features are united by terraces,—the whole producing an effect of surpassing grandeur. All who have studied works of art must have been struck by the mysterious power of the horizontal element in carrying the mind away into space, and into speculations upon infinity. The pictures of Turner and of Roberts afford frequent examples of this. The expanding effect which is thus produced upon the mind cannot be overrated. Perhaps there is no more decisive test of the general inferiority and want of refinement in Gothic architecture than the character of the painting and sculpture which has grown out of it. There is not a scrap or fragment of either of these arts, produced before the revival of classic art, that would for a moment be tolerated in a gallery where painting and sculpture were being exhibited for their artistic merits; and not only so, but the very nature of the style excludes alike beauty of form, delicacy of manipulation, and repose in composition,—the soft effect of flesh, the almost imperceptible dimplings of surface, and the perfectly free and harmonious combinations of all sorts of delicately-curved lines which are inseparable from good sculpture or painting, are altogether out of place amidst the sharply-defined geometrical shapes, the strongly-contrasted lights and shadows, the harsh, vulgar, reedy forms, and the inveterate perpendicularity of Gothic architecture. Every genuine style of architecture has carried its sculpture and painting along with it, not as sister arts, as we are in the habit of calling them, but as proper component elements essential to the completeness of every important monumental edifice. In the Egyptian architecture and in the sculpture we see the same look of repose—the same indifference to the passing events of the world's history—an expression of quiet waiting till all the bustle is over—till time shall be no more—when they shall enter upon a new and never-ending existence with the revived forms of that race whose genius called them into being, and whose civilization seems to us more like the close of the antediluvian period, when men lived a thousand years, and could afford time to do things well, rather than the beginning of the present paltry system of hurry-scurry, sham, and subterfuge. In modern Italian architecture we see a similarly intimate relationship to its sculpture; its loose composition, its gross mouldings, and its barrel-bulged columns, are fitly associated with corpulent cherubs, with festoons of such rounded and blown-out forms as apples and pears, and with tangled and weedy spandrils. The Greek is the only style of architecture which harmonizes with the highest style of sculpture and painting. The Theseus, the Illissus, the head of the Horse of Night, and the unrivalled frieze with the metopes which form the principal part of the Elgin Marbles, all belonged to the Parthenon. And the head of Jupiter, and that torso so much admired by

Michelangelo, might have also belonged to it; and yet no one can say that the architecture is in the least degree inferior to these noblest of works. But suppose them placed upon a building of any other style whatever, either they or the architecture would be lost sight of, as the one cannot combine with the other. This may be observed in the painted windows of our Cathedral, where the pictorial subjects are composed with all the skill of the German school of art. The same freedom which is usually observed in good historical pictures is adopted in the disposition of forms and colours, without any regard to the direction of the architectural currents; and from the fact that the walls are in shadow, and the light in general much subdued, the windows have the best of the strife, and the venerable cathedral has modestly retired from the field. The incongruity produced by the combination of artistic groups of sculpture with Gothic architecture is very markedly illustrated in Mr. Scott's design for the Albert National Memorial, and even the groups of figures introduced for effect into the large perspective drawing of the principal front of the new buildings for our University appear to belong to a style of art totally different from that of the architectural part of the subject. But perhaps one of the most shameless of all the claims advanced in favour of the use of Gothic architecture is its flexibility; that it is not tied down by rules, but admits of the greatest latitude; and this promiscuousness is dignified by the name of freedom. This is the argument which has been employed by loose characters in all ages to excuse their conduct. They prefer the laxity and regardlessness of publicans and sinners, to the prudent, cautious self-control which regulates the conduct of the wise and the good. I have gone somewhat more fully into the merits of the old Gothic than I at first intended; it is necessary, nevertheless, to turn for a little to modern Gothic, and inquire into its condition and prospects. The circumstances amidst which the old Gothic came into existence, and the system upon which it was carried on, were altogether different from ours. Although there must have been in all cases some directing mind and some general plan, it has not been established that there was any class of men devoted to the study of architecture as a separate profession. A great deal seems to have been left to the workmen, and to this fact we may trace many of the characteristics of the style. The minds of these men were not disciplined and refined by education; the literature of art, if there was any, must have been very scant; and it is evident that their knowledge was not very precise. They had "little Latin and less Greek" to look to, and so they had to express their thoughts and purposes in the best way they could. If we take our stand upon the Acropolis of Athens, from whence has come nearly all that we know of art in all its branches, we may see and comprehend the whole process of architectural development from beginning to end. From that eminence we look down into the obscurity of the Dark Ages, and see a noble struggle going on; we notice with intense interest the strength, the agility, and the earnestness with which these men climb towards the light, and most heartily award to them the highest meed of praise; but just in proportion as we admire the genuine Goth and the degree of progress to which he attained, so do we regret the retrograde movement which has been going on for the last thirty or forty years. It is not necessary to trace the history of this movement. It has been called the Mediæval revival; but with about as much truth as if we were to say that the Portland-cement models of Professor Owen at Sydenham are the commencement of a pre-Adamic revival. The spirit and the circumstances which produced Gothic art have passed away, and can never be revived. Men cannot divest themselves of civilization and knowledge even if they would. Ruskin says that good Gothic must have something wolfish in it. This is not the character of modern Gothic. We have no wolfish turns to serve, and therefore it is perfectly tame and subdued in its nature and aspect. We miss in it the rude vigorous life, the spontaneity, the artlessness, the wild revelry of invention, the heedlessness of rules, the interesting accidents, the sober colour, the softness of dilapidation, and the terrible bulging and splitting of the walls—these qualities are quite inimitable, and inadmissible by modern society, and in our orderly ways of planning, measuring, and estimating. Your Gothic architect nevertheless affects it as much as possible. He cannot be bothered with correct drawing; indeed, it does not suit him. He cannot himself tolerate, far less dare he venture before the public with a design in architectural lines merely. He feels, without knowing it, the poverty of his style, and in order to conceal this from himself and others, he draws his design for a new building in the clever dashing manner which he has acquired in making up his stock-in-trade by sketching amongst the grim and mouldering remains of the Middle Ages. His lines are neither straight, continuous, nor of equal thickness, but jerked, intermittent, and blotchy. He adds to the architectural lines those of the masonry, and, by a mode of hatching the individual blocks with a pen, produced by an alternate up-and-down and side-to-side motion of the hand, he gives a good imitation of canted stones in an advanced state of decay. The windows and other recesses are shaded in the same manner with a towsy blackness resembling matted tufts of coarse hair. He writes the titles on his plans in unintelligible old English characters, and his work seems a perfect realization of his own dreams and those of his ecclesiological patrons, and eagerly the order is given for the building to be proceeded with; but it rises from the ground trim, straight, and clean shaven; for although he has done his best to maintain the deception by rough-dressing the stones, and leaving the needful lime out of the joints, still, after every trick has been tried, the result is disappointment, and by-and-by the thing is pronounced to be another failure; in a year or two dirty streaks resembling shadows appear where shadows are not wanted, and to people of tidy habits this is quite abominable. Those who love the effect of dilapidation in old buildings detest it in the new, and soluble silicate or vulgar paint is resorted to to prevent the softening influences of disintegration and discoloration, which gives the building a still more hard and determined expression than it presented at the beginning. In this way important buildings are begun and finished, and fabulous sums of money spent in costly materials and mere workmen's wages, under the delusion that a great work is being accomplished. But when we have comprehended the plot, and marked the leading peculiarities in the detail, the interest fades away like that produced by the last popular novel; and the reason is obvious—ingenuity of arrangement, variety of detail, costly material, and the labour of mere workmen, do not constitute art—do not produce that kind of beauty which "is a joy for ever." Notwithstanding the general favour which has been bestowed upon this movement, and the splendid opportunities which have been afforded to it, we look in vain for any building of enduring interest in the style. While the Roman revival, beginning with Inigo Jones, and followed by Christopher Wren, Vanbrugh, Gibb, Chambers, and others, has given us many worthy structures, and the Greek revival has given us the Edinburgh High School and St. George's Hall, Liverpool—unquestionably the two finest buildings in the kingdom—there is not a modern Gothic building of more than ten years' standing that any one cares a straw about. The New Palace of Westminster compares very disadvantageously with Somerset House; and Donaldson's Hospital, Edinburgh, of which great things were expected, fails to excite even a passing remark; while the High School, the fragments of the National Monument, Dugald Stewart's Monument, the Surgeons' Hall, and the Institution on the Mound, continue to illuminate their respective localities with the light of truth and beauty, giving to our Northern Metropolis an air of refinement which no other city in the kingdom possesses. It is worthy of remark, that on the Continent, where art is more generally appreciated than with us, the Gothic movement has failed to establish itself in the favour of the public; and although it has prevailed now for many years in this country, and its promoters are generally pretty well read up in its details, yet it has made no real progress, and never can. If, on the one hand, it is made more picturesque, it becomes grotesque; if, on the other, it is made more orderly, it comes into competition with the Greek, against which it has not the shadow of a chance. Modern Gothic was introduced mainly by the aid of literary men, and written into fashion. We have seen all the phases and periods of it follow each other in rapid succession, ever changing, but never advancing; and it is evident that this cannot last much longer. In making architecture a fashion, it ceases to be an art; and like all other fashions which have come in, it will in due course go out, and be as much despised as it was formerly esteemed. I have thus endeavoured to point out the peculiarities of Gothic architecture. I have admitted its merits, and the interest which, for various reasons, attaches to it. And I have also shown that it is not associated with learning in any way; that it is not national; that the Christianity which it expresses was not of the purest type; that it is founded upon erroneous principles of construction; that it was the product of uneducated men, and that it does not teach us the higher principles of architectural art; that it is inconsistent with the best examples of sculpture and painting. And I hold that, for these reasons, it is most unfit to express the character and purposes of the University—an institution the object of which is to instil into the youthful mind a knowledge of the principles and laws by which all things exist and are governed—where the greatest and best examples of human attainments are exhibited and explained, and where habits of mental discipline and refinement are expected to be formed.

[After an elaborate criticism of Mr. Scott's designs for the University buildings, the lecturer concluded thus:—]

Some people who are naturally of a mild and amiable turn, and others who lack the power to discriminate, seek to quash discussion upon these subjects, and assuming an air of wise moderation, tell us that there are beauties in all styles. Now, it does not require any great effort of mental power to arrive at this very plain truth. Indeed, I suppose that the most vehement upholder of any particular style will readly admit that there is more or less beauty in every other style; but this is no reason why he should bury the hatchet, and fraternize with his opponents: the subject in dispute is as to which style is the best. We are bound by an imperative law of our nature, not merely to distinguish truth from error, but to aspire to the apprehension of the highest forms of truth, and realize them in practice. We are told that, if we take a broad view of things, we shall see beauties in all styles; but if, after having done so, we look more narrowly into things, we shall see further that there is a great difference in the amount and degree of beauty exhibited in different styles,—and just in proportion to our knowledge and sincerity, will we firmly maintain and zealously propagate the opinions which may be forced upon us by conviction. It would be difficult to conceive of any case in which a judicious decision as to the proper style was more urgently called for than in the present. The importance of having the mind stored with correct images cannot be too much insisted upon. It lies at the foundation of our ability to understand language. The impressions formed in youth stick to us through life, and those whose business it is to sow and plant in the fresh soil of young hearts, are under a heavy responsibility as to the quality of the fruit which may be gathered in mature years.

I know that it is in vain to fight with fashion. Crinoline has withstood with equal determination the attacks of reason and of ridicule, and I do not expect that my arguments will be productive of any good results in the present instance, and certainly it is not my wish that they should do any harm to the interests of the University. The Professors believe that these plans, if carried out, will form a new era in the architecture of Scotland. I have a hope, founded upon the good sense of my countrymen, that this anticipation may be fulfilled,—that men's minds may be opened to the absurdity of being bound by any considerations apart from those of truth,—that they will discard all sentimental revivals and look to their architects for a style which shall not only satisfy the wants of the present age, but create new and higher desires,—a style that shall tax the resources of the skilled workman, and sympathize with the highest attainments of the artist; and if the demand be steadily persisted in, it will sooner or later be complied with. When we look at the endless variety of forms and proportions which beauty assumes in the works of nature,—when we consider the attainments of the present generation of men in the various fields of discovery,—it is evident that our want of progress in architecture can neither be attributable to the exhaustion of the field, nor of our power to work it. The fact is, that we have been for the most part trying to adapt the old garments of our predecessors to our new wants, or we have been looking for fragments of ore amongst the débris of the old workings, and as the heaps have been often and

again turned over, the finds are very small and occur but seldom. But if we take up the lamp of reason, and boldly enter the mine, resolved to search diligently and to persevere courageously, we shall not fail to strike again the vein of truth, and with the many advantages which we possess over all the old workers, we ought to show a correspondingly abundant yield. The races of men which have developed architectural styles hitherto, have laboured within comparatively restricted spheres. But the zeal of modern delineators and photographers has enabled us to gather together examples of the achievements of all who have gone before us; so that we may sit by our firesides and quietly analyze them, marking their constituent elements, watching the gradual expansion of principles, and tracing the relation of different styles and varieties to each other. We have also the productions of the pencil and the chisel brought under our notice in the same convenient form. And, beyond these, we have the wide world of nature spread out before us. What a glorious prospect opens to our view,—and how is the vision to be realized. We have hitherto looked at the outsides of things,—we have collected and brought together their cold hard forms, unmitigated and unchanged, into mere incoherent juxtaposition; and no wonder that the result has been unsatisfactory. But if ever success is to be attained, we must look upon all that has been accomplished in art, and all that we see in nature, as so much raw material. We must throw our knowledge into the crucible to be transmuted by thought into new forms. Even the best of the old or existing forms are unfit for use until they are thus born again into a new life. He who made us after His own image endowed us with a creative faculty, and our using or abusing of that talent cannot be matter of indifference to Him. The pagan Phidias placed his wonderful frieze of the Parthenon at the top of the wall of the cella, almost concealed from view by the columns and entablature of the peristyle, and the back of the Ilissus, which Canova and Flaxman pronounced to be one of the greatest marvels of the sculptor's art, was turned towards the tympanum, never to be seen by man from the time that the figure was set up there under the eye of the artist, until it was taken down again under the eye of Lord Elgin. And it may be asked, "why this waste?"—The answer is that Phidias believed that the gods knew all things. And when we exhibit the like faith, the like success will follow. I know the difficulties which bar the way to excellence in this branch of art, and that if we would secure a needful share of the husks which the swine do eat, we must submit to have our brightest visions blurred and disfigured. But if we qualify ourselves with proper care, and endeavour humbly and faithfully to fulfil our mission, by the help of a sympathetic client now and then, we may be permitted to do some little towards the inauguration of a better state of things.

THE WATER SUPPLY OF PARIS.

INSTITUTION OF CIVIL ENGINEERS.

ON May 8, Mr. John Fowler, President, in the chair; the paper read was "On the Water Supply of the City of Paris," by Mr. G. R. Burnell.

This communication was principally confined to the methods adopted for securing the quantity of water required, and for its distribution and delivery; and was founded upon information obtained from M. Belgrand, the engineer-in-chief, as well as from numerous official documents.

It appeared that when this subject was firs. seriously entertained by the municipality of the enlarged city, in the year 1860, the population of Paris amounted to upwards of 1,600,000, and the quantity of water available from various sources was only 32,563,028 gallons per day, or rather more than 20 gallons per head per diem; but a large portion of this was used for municipal purposes, and nearly the whole of it was objectionable in quality. A careful study of the Paris basin, with a view to ascertain its capacity for furnishing a water supply, as dependent upon the geological conditions of the district and upon its meteorology, that had been carried on since the year 1844, showed that the basin of the Seine was formed of a part of the granite eruption of the Morvan, succeeded by the Jurassic deposits, without the intervention of the old and new red sandstones, or any trace of the carboniferous formation; the Jurassic deposits being in their turn followed by the cretaceous formations, and the whole being covered with the tertiary strata around Paris itself. It was remarked that French engineers and chemists attached great importance to the presence of the bi-carbonate of lime in water for drinking purposes; and that they held that a proportion of that salt, about sufficient to produce 16° of Dr. Clark's scale of hardness, was positively beneficial. Accordingly, in selecting the source, M. Belgrand gave the preference to the waters that filtered through the calcareous formations that outcropped around the granite. The waters of the Dhuis and of the Surmellin were brought to Paris, from the plains of Champagne, by an aqueduct, along which they flowed by gravitation, reaching the city at a somewhat higher level than had been calculated upon. The authorities had also purchased the right to take a considerable quantity of water from the River Marne, at St. Maur, above its junction with the Seine; while the waters of the Somme Soude had been at present passed over, and were left for the future extension of the works.

The springs of the Dhuis had yielded, in the driest season of the last twenty-one years, 6,698,400 gallons per day, and those of the Surmellin from 450,000 to 670,000 gallons per day. It was, however, believed that, by a series of operations connected with the drainage of the head lands surrounding these springs, the quantity from both these sources might be increased to 9,000,000 gallons per day, even during periods of prolonged drought. These streams after being united were led to Paris, in an aqueduct of masonry, that was never less than 4 ft. 6 in. high, and was at times increased to 5 ft. It was carried on arches in those positions where the depressions of the valleys did not exceed 33 ft., and where greater, a cast-iron syphon, 3 ft. 4 in. or 3 ft. 8 in. internal diameter, was substituted. The section of the aqueduct was in general ovoidal, but in places the sides had a curvilinear batter, according to the nature of the strata traversed. Its inclination was as a rule $\frac{1}{10000}$, but that of the syphons was $\frac{55}{100000}$, in order to accelerate the discharge through them. It was calculated to deliver 9,810,476 gallons per day, when running to within 1 foot of the crown of the arch, into the reservoirs lately built at Menilmontant, at a height of 301 feet above the level of the Seine. The materials employed in the execution of the masonry were "pierre meulière" set in the cement of Vassy; the whole of the interior and of the outside of the arches being "rendered," to avoid interference with the flow from the roughness of the surface, and to prevent the infiltration of the land waters.

The quantity of water obtained from the river Marne, at St. Maur, was about 9,000,000 gallons per day, when all the water-wheels were at work. This was pumped into a second story of the reservoir of Menilmontant, at a height of 287 ft. 7 in. above the Seine. This water was tolerably pure and limpid, but it was rather hard, containing a considerable proportion of bicarbonate of lime, in conjunction with a sensible quantity of the carbonate of magnesia.

From the several sources which had been described, it was believed that a supply of 15 million gallons per day would be obtained in the course of this year, or, together with the existing supply, a total of upwards of 47 million gallons per day for a population of 1,667,841.

On the left bank of the Seine there had recently been purchased a series of springs rising from the chalk formation at Armentières, in the valley of the Vanne, and their volume would be increased by the springs of Chigy, St. Philbert, Malhortie, Theil, Noe, &c. These waters would be led to Paris by an aqueduct, 104 miles in length, and it was calculated that the quantity that would be so delivered would be equal to 22,328,000 gallons per day. When all the works for improving the water-supply were completed, including the supply derived from the Marne, the Canal de l'Ourc and its increase, the artesian wells about to be sunk in various parts of the city, &c., it was estimated that there would be a gross total of 105,388,160 gallons per day, a quantity more than ample for a much larger population than that of Paris was likely to become. But it must be borne in mind that the waters of the Canal de l'Ourc would still constitute more than one-half the whole quantity, and as this canal was navigable, it was exposed to various sources of impurity. In future two sets of pipes were to be established; one to supply spring-water from the Dhuis, the Marne, and the Vanne, the other to supply the waters of the Ourc and the Seine for the service of the street washing, for the monumental fountains, and for other purposes of the municipality. The water now taken from the Seine was distributed with all the impurities it might contract during either seasons of flood or of drought. An inconsiderable quantity was filtered, in the interior of the town, at the "fontaines marchandes," but the revenue derived from this was equal to about one-seventh of the total sum received for the sale of water in the course of last year.

Fourteen reservoirs were at present in use, of which four were reserved for the waters of the Ourc, nine for those of the Seine, and one for those of the aqueduct of Arceuil. Of these the last and two which now distributed the waters of the Seine were to be abandoned on the completion of the new works. The reservoirs at Menilmontant, and at the telegraph of Belleville, lately constructed, were intended to receive the waters of the Dhuis and of the Marne; and they were calculated to contain together, in the two stories of arches of which they were composed, about 29½ million gallons. The cubical contents of the existing reservoirs, without including that of the Basin de la Vilette, at the extremity of the Canal de l'Ourc, amounted to nearly 23 million gallons. A description was then given of the reservoirs of Passy and of Menilmontant; and with regard to the former it was remarked, that all the skill and attention of the French engineers had been employed in vain, in the attempt to prevent the action of atmospheric causes upon the masonry, which had given serious grounds for uneasiness, owing to the contraction and expansion of the masonry. It might be that the perfection of the setting of the cement upon the masonry had something to do with this effect, for it could not yield, like an elastic substance, such as mortar of the proper quality of hydraulic lime. In the construction of the reservoir at Menilmontant, the surface of the excavation in the gypseous marls, which were hard when originally cut, but which yielded under the influence of the atmosphere, had been "rendered" with a coating of plaster of Paris 1½ in. or 2 in. in thickness. This had been found to be an efficient temporary protection from disintegration, under the effects of rain and of frosts.

The appliances for securing the effectual distribution of the water brought into Paris, and the quantities required for the different services, were then detailed; and it was stated that the authorities undertook to deliver, when all the works were completed, gratuitously to the citizens a total quantity of 54,000,000 gallons per day. The execution of the works required for the distribution of the water to private houses and factories has been undertaken by a company, under an agreement with the town, for fifty years, during which time it was to collect the water-rates; and at the expiration of that period the whole of the estate was to become the property of the city. The profit arising from the execution of these works, at a fixed schedule of prices, and a sum agreed upon as a remuneration for the risk and trouble undertaken by the company, were the first charges upon the revenue, and the excess beyond these amounts was shared in the proportion of 75 per cent. to the town and 25 per cent. to the company. In this way it had been estimated, by M. Belgrand, that during the year 1863 17,000,000 gallons of water had been delivered. The receipts for the private supply in 1864 amounted to 3,822,760 francs, from 23,074 subscribers, a number which, it was calculated, would be increased by 2,000 in twelve months. Considering that there were upwards of 50,000 houses in Paris, this might be cited as a proof, if such were wanting, of the bad effects that must always attend the gratuitous supply of water upon the habits of daily life of the citizens. It might be added, that the price charged to the water-carriers at the filtering fountains was 9d. for 230 gallons, and this quantity was retailed for 4s. This increase in the price was one of the principal reasons brought forward to justify the great outlay incurred in leading to Paris the spring water from the Dhuis and the Vanne.

In conclusion, the author thought, upon a review of all the conditions of the Paris water supply, that it must be regarded as a commercial failure; for while the town paid 2,060,000 francs for salaries and repairs, it derived only 4,750,000 francs from every source of revenue, including interest and sinking-fund. It might, however, fairly admit of doubt, whether the system had been a failure, if considered as a

means of meeting the wants of the inhabitants, who were themselves too poor to pay the rates that would be required to defray the expense of conducting the water to their houses. But the system was believed to be wrong, inasmuch as it entailed upon the city a heavy burthen for the water supply, which no one had a direct interest in checking, because it was paid for out of the town dues, instead of being made a separate charge upon the funds of the city.

RAILWAY MATTERS.

THE question of noise from trains passing along the metropolitan railway bridges crossing streets, which has been so much complained of, was raised in a conversation lately between Mr. Scholefield, the chairman of one of the House of Commons railway committees, and Mr. Hawkshaw. Mr. Hawkshaw gave it as his opinion that this excessive noise was mainly due to the construction of these bridges entirely of iron. He stated that this construction was insisted on by all the parochial authorities, but that if these bodies would allow the bridges to be made of brick or stone, as formerly, the noise caused by passing trains would be very little, and, indeed, with proper precautions, might be almost entirely obviated.

The increasing traffic through Crewe station having rendered it necessary that more extensive accommodation, both for passengers and goods, should be provided, the London and North-Western Railway Company are erecting a new station. The building operations were commenced in May, 1865, Mr. Parnell, of Rugby, being the contractor. The buildings will be on the south side of the Nantwich-road bridge, and the access for passengers will be on both sides by means of stone steps; one near the Crewe Arms Hotel, and the other on the opposite side of the bridge. The total length, including the platform, will be about 300 yards, and the length of the buildings about 70 yards. It is built on the same plan as the present station. There is every requisite convenience provided.

At Stokebridge, Ipswich, a new goods station has been opened. The new station, extending to Stokebridge, fills up the space between the Commercial-road and the river, with a net-work of lines for making up trains. Next Commercial-road is a large goods shed some 70 yards long by 12 or 13 yards wide, and on the side next the river goods are received, whilst they are delivered on that next the road; there is also a spacious grain shed. Down the centre of the station-yard runs a road-way paved with iron pavement, and from the lines on either side of this trucks deliver into carts and waggons. At the Stokebridge entrance to the station are two new weigh-bridges. The offices, divided into a receipt, a delivery, and a general office, are placed between the goods and the grain sheds.

ACCIDENTS.

THE Phœnix Gas Company are having built for them, on their premises at Vauxhall, a new retort-house, of considerable size. The walls of this building enclose a space of about 300 ft. in length by about 80 ft. in breadth, and, having been raised to the required height, some 60 ft., the skeleton of the roof, composed entirely of iron, was placed upon and tied into the brick-work. The men engaged on the building went off to dinner, and a few minutes after, the chairman and directors of the company, with some of the principal officers, arrived to inspect the work. They had just completed their survey, and had passed out of the building, but were still within a few yards of it, when, with a terrific crash, the roof gave way, falling inwards, and carrying with it huge masses of brickwork from the walls on either side. In five minutes the men would have returned from dinner, and two or three minutes after some thirty or forty of them would have been at work within the buried area, and it is hardly possible that any of them could have escaped instant destruction.

The water-main in Dale-street, Liverpool, has again burst, at the junction with North John-street. The roadway was torn up for some distance, and Water-street flooded; but, fortunately, the large body of water was carried away without causing any serious damage.

A large building in Sunderland, formerly a patent ropery, and three stories in height, having recently been sold, was being converted in the lower story into an ale-and-porter store, the upper part being occupied by a joiner and cabinet-maker. In the north gable, about 50 ft. in height, an iron girder had been let in to carry the two upper stories, the ends resting on rubble walls 2 ft. and more in thickness. To obtain cellars, it was found necessary to underset the wall, and some men had excavated to 6 ft. in depth, when suddenly the whole of the gable gave way, and fell, a great portion of the roof accompanying it, and burying in the ruins the men employed. One man has been got out alive, and a second was found dead. No one else is missing.

Two inquests have been held in cases of accidents caused by cranes. A labourer, employed at the Commercial Foundry, Hulme, fell off a travelling crane, and was mortally hurt. It is supposed that the handle, while in motion, slipped from the deceased's hand and threw him off the crane. In falling he pitched heavily on the back of his head, and died the same night. A similar accident occurred on the same day to a labourer of Failsworth, in the employ of the Railway Steam-Plant Company, at Newton Heath. The deceased and three other men were occupied in lowering a steam-hammer anvil block, weighing 5½ tons, into a bed prepared to receive it. Suddenly the "bent" handles flew out of the grasp of the men, the ponderous weight of the block, it is thought, being too much for the men's strength, and in their revolutions the deceased was violently hurled from the traveller and fatally injured. He died the same night. The jury returned a verdict of "Accidental death" in each case; but in the latter they recommended that in future more care should be taken in employing proper handles for the cranes, the "bent" handles not being considered safe.

An accident with a fly-wheel took place on Monday week at the Rolling-mills of the well-known engineering establishment of Messrs. Cockerill, at Seraing. It was fortunately unattended with any fatal consequences; but, from its rare nature, it deserves a passing mention. We may premise that in large rolling-mills it is usual to attach a second fly-wheel to the engine, called in Staffordshire a "counter fly," which runs at a very high velocity. The object of this "counter-fly" is to prevent the stoppage of the machinery, which would otherwise occur, when all the rolls are brought into action at once. The force stored up by the extra fly-wheel is sufficient to meet the sudden demand made upon the driving power. It happens occasionally, but happily very rarely, that a "counter-fly" bursts, and generally with very disastrous consequences. This is what happened at Messrs. Cockerill's factory, when a fly-wheel of an engine of 120 horse-power broke into fragments. After having cut through an immense beam of oak, plated with iron, and broken down a wall, some of the pieces were projected to a distance of 500 ft. The engineer was found nearly suffocated by the steam from the pipes which had been destroyed by the wheel in its flight.

EDINBURGH.

University Club.—The alumni of the various universities resident in Edinburgh formed themselves into a club about two years ago, and a club-house is now in course of erection for their accommodation in Princes-street. The masonry of the structure is now completed, and the internal fitting-up is to be rapidly proceeded with. The building has a frontage of 60 ft., and is united by a corridor with a building of like breadth in the rear. In the front part are situated the morning-room, library, dining-room, &c., with bed-rooms above; and the back part is occupied by billiard-rooms, smoking-rooms, baths, &c. The façade is of four stories, exclusive of the area, and the style adopted by the architects (Messrs. Peddie & Kinnear) is Italian. The chief feature of the elevation is an oriel window, having the appearance of a portion of a circular temple. It is of two stages, of five lights each, divided by fluted Corinthian columns, the entablature of the first tier being decorated with the Greek fret. On the street front it is flanked by the doorway to the east and a window to the west, each having richly decorated cornices and architraves. Above these are two windows with decorated pediments, supported by trusses. On the second-floor there is a range of five windows, with cornices more plainly treated, and the frieze is pierced by a range of square windows divided by panels, and the whole is surmounted by a bold cornice, with lions' heads under hoods, which rise slightly above the upper member of the cornice. The evident aim and object of the architects has been to produce a work displaying classical refinement and harmony, and in this they have been fairly successful. It is a building that would not have seemed out of place in ancient Athens, had modern club life been in operation there; but is it a work appropriate and in keeping in "Modern Athens," in "the grey metropolis of the north?" In the clear and sunny atmosphere of Greece or Italy the detail (which is almost effeminate in delicacy of treatment) would be brought into strong relief, but here it is lost under our cold and cloudy sky, and rain and soot will soon clog it up entirely. An opinion has often been promulgated that the architect should so design his building as to make it express the purpose and use to which it is to be applied. The task would often be a difficult one, and in this case it may be thought so. The next building but one to the east of the club is by the same architects. It consists of a shop on the ground floor, with three stories above, occupied as chambers. The elevation is decorated with medallions of Scottish worthies (Scott, Watt, &c.). What is the meaning of such being placed there? Merely a freak and fancy of the moment? Had the club-house been similarly adorned with portraits of the celebrities of the Universities (the Stewarts, Playfairs, Hamiltons, &c.), would there not have been appropriateness and good sense in the arrangement? Would it not have given life and spirit and meaning, which Greek frets and such like can never convey here in this nineteenth century?

WESTMINSTER.

WITH reference to an observation reported in our last number, touching the railway works now going on in front of the abbey, and the fear lest a station should be placed there, we are told by one who ought to know, that the station of the line now in course of construction (that of the Metropolitan District Railway), is to be in Canon-row. To this there can be no objection, but it is to be hoped that it will not be allowed to obliterate the name "Canon-row,"—which, whether it be derived from the channel of the Thames, that formed the north-eastern boundary of Thorney Island, or from the canons of St. Stephen's, is one of the most interesting historical reminiscences of the neighbourhood.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held on Friday evening (the 4th inst.), at the House in Conduit-street.

The chair was occupied by the President, Mr. R. W. Edis.

Mr. T. Roger Smith called attention to two of the rules of the Association which he thought required amendment. The 4th rule described who should be the office-bearers of the Association, and provided for a president, vice-president, two secretaries, &c. The Association had assumed considerable dimensions since its rules were originally drawn up, and now it was considered desirable by several members that a further opportunity should be afforded of appointing to an office those who might be deserving of it. Hitherto it had been the practice to appoint a vice-president with a view to his becoming hereafter president, but he did not think it was desirable that the practice should grow into a rule, or that the Association should be in any way pledged to promote the vice-president to the principal chair. Heretofore the means at the disposal of the Association for recognising eminent or onerous services were restricted, and, in his opinion, it would be desirable, by amending the fourth rule, to give the Association the means of bestowing more honour where more work was done. He proposed, therefore, that the number of vice-presidents should be increased to two. In this respect they would but be following the precedent of other Art-societies, including the Royal Institute of British Architects, which found it desirable to have several vice-presidents. Another recommendation in favour of appointing two vice-presidents instead of one was, that in the absence of the president the chair might always be taken by one of the vice-presidents.

The motion, which was seconded by Mr. Lewes, was carried without discussion, and the rule was amended accordingly.

It was further resolved, by twenty-seven to eight, after considerable discussion, to revoke the rule that the office of president could not be held by the same person for two consecutive years.

The meeting then proceeded to consider the report of the Architectural Alliance, and eventually a resolution was passed, to the effect that in the opinion of the Association the proposal for making the quantities part of the contract was deserving of serious consideration, but that, as a matter of fact, it was not a usual course in London practice.

Mr. J. D. Mathews called attention to a misconception which had arisen from the wording of the report of the sub-committee on the Library, brought up at the last meeting. The sub-committee, although recommending a subscription, did not mean an annual payment in the usual sense of a subscription, but a payment from members in the light of a donation.

THE QUEEN'S HOTEL, ABERYSTWYTH.

THIS large undertaking, which is the property of the Hafod Hotel Company, was publicly opened on the 1st of May.

The building is an oblong block of 150 ft. frontage towards the sea, with an average depth of 85 ft. It is five stories in height, and is constructed to make up 104 beds. The materials used in the building are the local blue slate stone with dressing and quoins of Grinshill freestone of a creamy white tint, whilst the cornices are of a white moulded brick; the columns and other ornaments of terra-cotta of similar colour, to relieve the dark appearance of the local stone. The walls are surmounted by tall slate-covered roofs, one of which rises high above the rest as a tower, and, being finished with an ornamental iron cresting, presents a large platform from which a fine landscape can be viewed.

The architects of the building were Mr. Charles F. Hayward and Mr. H. D. Davis, both of London. Mr. G. Lumley has acted throughout as clerk of the works, and under his superintendence, unaided by the employment of a special contractor, the whole has been executed.

The terra-cotta work has been supplied by Mr. Blashfield, of Stamford.

LIVERPOOL.

Expenditure under the Liverpool Sanitary Acts.—The accounts for 1865 have just been issued. The ordinary receipts for paving, sewer, and general rates, less amount set apart for sinking fund, was 151,281*l.* 2s. 8d.; a loan of 10,000*l.* made the total receipts 161,281*l.* 2s. 8d., and the expenses of scavenging, paving, sewering, watering, salaries, &c., came to 121,024*l.* 6s. 4d., and the extraordinary expenditure to 31,918*l.* 6s. for new works, and court and alley improvements, making the total net expenditure 152,942*l.* 12s. 4d.

The Liverpool Waterworks.—The accounts of the Liverpool waterworks have just been issued for the year ending 31st of December last. The ordinary receipts amounted to 115,820*l.*, of which water rents produced 50,785*l.*, the rate on property 47,423*l.*, and the water supplied to shipping 8,920*l.* The expenditure was on a similarly large scale. The amount paid for interest during the year was 86,170*l.*: the various local pumping stations entailed an outlay of 6,969*l.*; general repairs cost 5,078*l.*, the treasurer's department 4,927*l.*, the engineer's department 3,655*l.*, rates and taxes 2,015*l.*, and Rivington ordinary account 5,685*l.* The Rivington construction account for the year, including the outlay on a duplicate pipe line, was 43,060*l.*; the extension of pipes cost 14,188*l.*, and various other items bring up the total under the head of extraordinary expenditure to 63,000*l.* The ordinary expenditure exceeded the ordinary receipts by 7,308*l.*

Improvement of Working Men's Dwellings in Liverpool.—The corporation have taken an important step towards remedying the evils of over-crowding. They have resolved "to acquire land, or devote land now forming part of the corporate estate, for the erection of labourers' dwellings, at suitable spots, and that such land be sold on chief rent for the erection of such dwellings, according to plans approved of by the council;" and to "purchase the fee-simple of five pieces of land, belonging to Mr. Alderman Houghton, in the vicinity of St. Martin's Church, comprising 22,550 square yards, with a view to the erection thereon of labourers' dwellings, at 18s. per yard." At a meeting of the Dock Board, also, their works committee have since recommended that negotiations should be opened with the corporation "for the sale to that body of 31,751 yards of land, on the south side of the canal locks," to be devoted to the same purpose. It is understood that the proposition meets with the unanimous approval of the Board.

The Germans at Liverpool. — The local authorities are much perplexed as to what should be done in regard to the German emigrants who are still flocking into Liverpool. Some hundreds have been in the streets at one time without any provision for lodgings having been made for them, and the workhouse authorities say that it is only those destitute from want of money, which they are not, who have any title to accommodation in the workhouse. The local Board of Health have been considering whether it be possible to stop the influx, but they cannot see their way to such a result. The subject of accommodation for the emigrants has been referred to the emigrant sub-committee, and steps are to be taken to ascertain what can be done to compel the foreign agents by whom they are forwarded to make provision for them on their arrival.

WREXHAM.

THIS town, situated as it is nearly in the centre of a mineral district, is a thriving place. Within the last ten years its importance has increased three or four fold compared with what it was before. Public works in the neighbourhood and in the town, with new houses, new shops, have quite changed the character of the place to a commercial thriving place of business, and it is only yet in its infancy as to what it will be when the minerals in the neighbourhood are developed. Public sewers have been made within the last three years, at a cost of about 8,000*l.*; public slaughter-houses, at a cost of 2,000*l.*; and since the public sewers have been made, about 800 houses have been drained. Waterworks, by a private company, are now in course of construction, at a cost of about 10,000*l.*, and everything seems to be on the move. During the past five years, when Mr. Hugh Davies was the borough and local surveyor, much was done to forward sanitary improvement. A new brewery for Alderman Peter Walker is now in course of building by Mr. Joseph Kirkham, of Liverpool, at a cost, with stables and other appurtenances, of upwards of 12,000*l.*, Mr. Davies being the architect. A malt-kiln for Mr. Jones, brewer, is about to be erected, at a cost of about 2,000*l.*

SERIOUS EXPLOSION OF GAS AND LOSS OF LIFE.

AN explosion of gas took place early on Wednesday morning at the private residence of Mr. Gambart (well known in connexion with art), Avenue-road, St. John's-wood. For some days past preparations had been going forward at the house for a fancy-dress ball, which would have taken place on Thursday evening. Some temporary refreshment-rooms and a supper saloon were being constructed, and gas was conducted from the mains in the house to these apartments. On Tuesday evening the preparations were nearly completed. Mrs. Gambart expressed her great anxiety to the workmen that the gas might be perfectly safe, and she was assured that every precaution had been taken, and all the arrangements were perfect. On Wednesday morning early a strong smell of gas was felt by the servants; nevertheless, a few minutes before eight, a charwoman employed to assist the servants went into the kitchen, and struck a lucifer to light the kitchen-fire, when a fearful explosion took place, involving the destruction of a picture saloon in the rear of the house, property in pictures and articles of *vertu* to the value—we are told—of many thousands of pounds, the loss of a life (that of the charwoman), and injury to three other persons. The family and visitors, who fortunately occupied the front part of the house, escaped in their night-dresses comparatively unhurt. While pictures by Rosa Bonheur, Stanfield, and others, were utterly destroyed, a copy of Frith's "Derby Day" and it is a coincidence that the accident occurred on the Derby Day, remained unscathed. The escape of gas is attributed to the couplings between the main and the temporary supply being imperfect.

THE HOUSES OF EMINENT PERSONS.

THE Council of the Society of Arts, some little time ago, appointed a committee to consider how the Society might promote the erection of memorials of persons eminent in arts, manufactures, and commerce. The committee, at their first meeting, on the 7th inst., recommended that experiments with various descriptions of tablets should be made, and that designs be obtained for that purpose; that on these tablets should be inscribed concise information relative to the individual, or the fact commemorated by the tablet.

The desirability of setting up such memorials was urged and reiterated by us very long ago. More recently (volume for 1864, pp. 485 and 537), we gave lists of houses that deserved to be so marked, and invited the Society of Arts to take up the subject.* It is with much satisfaction, therefore, that we note the steps that are being taken to carry out the proposal.

The committee further recommend, as we have done, that the tablets should not be limited to persons eminent in arts, manufactures, and commerce, but should include places and persons connected with historical events, "such, for instance, as the site of the residence of Lady Abingdon (where Abingdon-street now stands), who was known as the writer of the letter to Lord Monteagle in reference to the Gunpowder Plot; also the spot where Caxton worked his first press in Westminster; and the like."

THE FUNGI OF GREAT BRITAIN.

AMONGST the recent additions to the Food Department in the South Kensington Museum, are thirty large drawings (of a series at present incomplete), by Mr. W. G. Smith, of the principal edible and poisonous fungi of Britain. Although similar drawings to a smaller scale are found in some of the Continental museums, this is the first time any reliable drawings from nature, with the necessary sections, have been made for educational purposes for any museum in this country. A reference to the portraits of these equivocal productions will show what weird and curious aspects some of these plants, so common in our pastures and woodlands, present,—so valuable when understood as additions to the table, and so dangerous when the poisonous species are by accident substituted for the esculent.

We trust this series of drawings will tend to prevent repetition of the cases of poisoning we constantly read of every autumn. The real *seeds* (or spores) of various species also exhibited, call to mind the mysterious brown powder poison of the gipsies, called "drei," confessedly extracted from fungi, and of which we heard so much a few years ago with no final result.

AN HISTORICAL TREE.

THE acacia, or, more correctly speaking, the false acacia, or locust-tree (*Robinia pseud-acacia*), was first introduced into Europe by Vespasian Robin, arborist to Louis XIII., in the year 1635. The original tree, brought by Robin from North America, and planted in the *Jardin des Plantes*, is still in existence, and is now putting forth a few leaves. In 1815 it began to show symptoms of decay, but the branches being lopped, the trunk shot out with redoubled vigour. Mr. Loudon visited this veteran in 1835, and it was then 35 ft. high, but in its prime it was nearly twice this height. It has now dwindled down, and its worm-eaten and wrinkled trunk is carefully supported by iron bands, so as to prolong its existence as much as possible. The appearance of the leaves is looked forward to with much interest and anxiety by the visitors to the garden, as it is feared that every year may be its last.

* See in same volume pp. 515, 536, 588, 603, &c.

PRIZES AWARDED BY THE ARCHITECTURAL INSTITUTE OF SCOTLAND.

FOR the best Geometrical Drawing, being an elevation of any existing example of Grecian or Palladian Architecture,—to be competed for by apprentices, of not more than three years' standing, of any Scottish architect.

Four drawings were submitted for examination. The committee considered that the drawings of James Darling, apprentice to Mr. W. M. Gorrie, architect, Edinburgh, and John Ord, apprentice to Mr. D. MacGibbon, architect, Edinburgh, were equal in point of merit, and awarded a book to each.

For the best Original Design—Subject, Design for a Suburban Residence in the Italian Style of the Sixteenth Century; cost not to exceed 5,000*l.*,—to be competed for by apprentices to any Scottish architect.

Three sets of drawings were submitted. The council awarded a book to G. F. Wilson, apprentice to Mr. Leadbetter, architect, Edinburgh, his design being, in their opinion, the best submitted.

An Extra Prize of £5 5s. was offered by Mr. William Miller, late Secretary to the Institute, for the best series of not less than five drawings of Scottish Buildings, suitable for publication in the Illustrated Transactions of the Institute.

Two sets of drawings were submitted for consideration. The council were of opinion that the drawings of W. H. Syme, in the office of Mr. D. Brice, architect, George-street, Edinburgh, were the most meritorious, and highly deserving of commendation. The council unanimously resolved to publish Mr. Syme's drawings in the Illustrated Transactions of the Institute for next year.

DEMOLITION OF FORTIFICATIONS.

THE removal of the fortification at Antwerp has been for some time in active progress, part of the space obtained being intended for the erection of some buildings connected with the sewerage. The fortifications at Charleroi are also to be destroyed, so as to admit of the extension of the coal mines. According to the old regulations, no workings were allowed to approach within a certain radius of the fort, the demolition of which will permit of the getting of a large quantity of coal. A petition was presented to the Emperor of the French, some months ago, by the committee of an association for improving the dwellings of the working classes at Amiens, showing that a valuable site might be obtained for the society's operations by the removal of the citadel. On the 15th ult. a deputation from the Association was honoured by an interview with his Majesty, who promised to become a patron, and also to give the question of the demolition of the citadel his favourable consideration. We fear that these events cannot be regarded as concessions to the arts of peace, or as forerunners of the time when the spear shall be beaten into the pruning-hook and the sword into the ploughshare. They have rather the appearance of an acknowledgment of the uselessness of fortifications constructed to resist the artillery of the last century against our modern Armstrongs and Whitworths.

THE THREATENED TUNNEL THROUGH OLD ST. PANCRAS CHURCHYARD.

A FEW days ago, Sir George Grey, in answer to an inquiry in Parliament, stated, in reference to the London approaches of the Midland Railway, "that it was not intended to cut through Old St. Pancras Churchyard, but to tunnel 12 ft. below it." Now, I can hardly consider that this will be a satisfactory avoidance of it, particularly with the threatened cholera hovering about; and I hope that what I am about to state may induce your using the very powerful influence of the *Builder* to prevent this proceeding, as I have had some experience of the condition of that churchyard.

In the years 1847-48, when in partnership with Mr. Gough, we were professionally engaged in enlarging and nearly rebuilding Old St. Pancras Church. To effect the enlargement of the church to twice its original size, a piece of the burial-ground was taken, and a part of the ground formerly used for burials was excavated. These excavations were carried down below the level of the ground disturbed, and when that surface was reached, which was at an average depth of between 8 ft. and 9 ft., the clay was so saturated with decomposition as to be horribly fœtid, so that, when I returned to my office, after standing a short time in the excavation, I was glad to have my boots cleaned, to get rid of the smell of the small particles of clay that adhered to them. The ordinary excavators who undertook the work deserted it, being made sick, although frequently given spirits by the contractors to prevent nausea, and their place was supplied by some seasoned gravediggers, who were collected for that purpose.

The trenches for the foundations of the walls, particularly the tower, which went down about 10 ft., was, if left without bailing, filled with a dark-coloured, filthy, stinking water, that ran through from the surrounding ground, which was for a depth of from 8 ft. to 12 ft. a mass of coffins, with a crust of about 3 ft. of earth covering them, and packed upon each other with hardly any intervening ground. Two of the coffins which were removed from the excavation for the church had, from the plates upon them, been seventy years in the ground; and such is the slow progress of decomposition of a body soaking in clay water, that when by an accident the bodies were exposed, they were seen to be nearly perfect in figure, and looked like sodden dark brown leather. These bodies and all the human remains were carefully collected and buried in one or another of the large excavations which were then in use in the other parts of the graveyard; and it is to these general pits that I more particularly refer. The ordinary mode of burial in vogue at that time, particularly for the poor, was to excavate a large and very deep pit to place coffin upon coffin, with a slight layer of clay between, just to hide the coffin below, and not to cease doing so until the last coffin was within about 3 ft., or even less, of the surface of the ground, and these pits were so close together as only to leave something like a foot to separate them from the adjoining pit.

Now, I am certain that at a depth of only 12 ft. from the surface (in this case an uncertain one) these pits will be cut into; and as the water was only kept down in them while they were open by constantly bailing the interstices between the coffins, and being full of water, you may imagine the pleasant dropping which will take place through the very pervious arching which forms the roofs of most tunnels, when this reservoir of decomposition overlies the top of it.

I cannot help thinking that, with a little management, this churchyard might be avoided; and even if it cannot, that an open cutting, with retaining walls, would be better; all objectionable things might be more easily met and provided against in the light of day than by tunnelling through it. I hope that you may consider that the carrying out these railway works in the way mentioned by Sir George Grey is as objectionable as it appears to me to be, and that the horrible distillation of putrescence, which I anticipate through the roof of the tunnel, may, by your influence, be prevented, to the great advantage of all future travellers by this route.

R. L. ROUMIEU.

FLITCH GIRDERS.

SIR,—Will any of your scientific correspondents kindly state the proper formula or mode of calculating the strength of a flitch girder? Do the timber cheeks count for anything in resistance to superincumbent weight, or do they simply resist the twist to which the thin metal flitch would be liable?

F. W.

BELFAST ALBERT MEMORIAL.

SIR,—I am the third competitor who has, as yet, in vain asserted a claim to the first prize, but I hope soon to have my case sufficiently matured to bring it before the Irish Courts.

To the charges contained in my letter which appeared in the *Dublin Builder*, not long since, no answer has been given either by Mr. Barre or the Committee. An inquiry was instituted, but no report was returned. Only the gentlemen who made the charges attended; the builder and others implicated in the nefarious acts not appearing in answer to the summons of the "Committee of Inquiry."

MORTIMER H. LINKLATER.

"METROPOLITAN BENEFIT SOCIETIES' ASYLUM."

SIR,—Your courtesy and kindness on all occasions to endeavour to please everybody have, in this week's *Builder*, done the above institution, myself, and the successful builder a great injustice. The facts of the case are these:—An advertisement is placed in the *Builder* for tenders, the drawings and specifications to be seen at my office, and in the specification are these words,—"Each builder is requested to take out and depend upon his own quantities; neither the committee nor their architect supply or recognise any quantities."

Notwithstanding this, Messrs. Rake, Ranwell, & Nixon, of Portsmouth, apply to take out quantities for some builders. Being a public competition, I could not object, so long as they did not provide the quantities for all; because, if I intended quantities to be supplied, I should have appointed my own surveyor. The above gentlemen, after occupying my office four days, leave their card, without permission, on the table, with the following inscribed on the back,—"The quantities have been prepared by us, and may be had on application, free of charge, unless successful."

In your *Builder* of April 28th, you kindly insert the result of the competition, sent by me, viz., quantities not supplied and the accepted tender; but in this week's *Builder* you admit a garbled list of tenders, containing the highest and lowest, omitting one-half the contractors, and insert the names of parties as if they were employed to take out the quantities. The builder feels hurt on account of the great contrast inaccurately exhibited.

W. P. GRIFFITH.

*** The additional list complained of was inserted, as we stated at the time, at the request of the persons who tendered. With all respect for our esteemed correspondent, we cannot admit that we have thus done any injustice to the institution, himself, or the successful builder. The "contrast" exists, however it may be shown.

BUILDERS' CHARGE FOR TENDERS.

AT the Thirsk County Court, before Mr. Serjeant Dowling, Mr. Fawcett, a builder, at Thirsk, claimed 3*l.* 4*s.* 9*d.* against Mr. A. C. Bamlet, manufacturer of reaping machines. In December, 1864, an advertisement was inserted in the local papers, asking for tenders for an extension of Mr. Bamlet's reaper works. Tenders were sent to Mr. W. A. Bourne, the architect, plaintiff's being the lowest. None of them, however, were accepted, all being considered too high. Subsequently the works were executed by workmen employed by the defendant, who also found his own materials, and the brickwork was executed at a considerably less cost than any of the tenders.

Plaintiff now sought to recover 1½ per cent. on 216*l.*, the amount of his tender for brickwork, and relied on the fact that the words, "The lowest or any other tender will not necessarily be accepted," were not in the advertisement. He also produced a copy of the *Builder*, May 27th, 1865, where a somewhat similar case is reported as tried at the Shoreditch County Court, before Mr. Charles Coleman,—"Parsons *v.* Acton,"—in which case the builder obtained a verdict for part of his claim.

In this case, however, the learned Serjeant said, there was no contract, and therefore plaintiff could not recover. He had every respect for the deputy-judge, Mr. Coleman, but he should not have decided that case as he did. It was monstrous to suppose that because builders or any other tradesmen chose to send in tenders when mooted, to perform works or supply goods, they were to be paid for their tenders when the works were not performed or the goods supplied.

Judgment for the defendant, for whom Mr. Richardson appeared.

CHARGE FOR BUILDERS' ESTIMATES.

AT the Secondaries' Court, before Mr. Potter and a Common Jury, last week, was tried the case of Fish *v.* Brooks, it being an issue sent down from the Court of Common Pleas to determine whether the plaintiff, a builder, was entitled to claim his expenses for making a certain estimate at the request of the defendants.

Mr. Holl appeared for the plaintiff, Mr. Hance representing the defendants.

Mr. Holl, in opening the plaintiff's case, said that his client claimed 13*l.* 13*s.*, his expenses for making an estimate of the cost of repairing Sir Henry Leake's mansion in Essex. Plaintiff had been asked to make a specification, and he did so; but, as he was not employed to do the work, he considered that he was entitled to charge for the estimate. Some correspondence had passed between the parties, and plaintiff finally determined to enforce his claim in a court of law.

Mr. Fish said: I am a builder, of Cambridge Wharf, Pimlico, and in August, 1864, I was required by defendants, who are house agents and surveyors, to give an estimate of the cost of the repairs of Sir Henry Leake's mansion in Essex. At the first or second interview with Mr. Shallow (defendant's partner), I was told that some repairs were necessary at a mansion in Essex. Mr. Shallow asked me to go down and make an estimate, and upon my saying that I must be paid my expenses, he replied "Certainly. It is my intention that you shall do the work, and perhaps that question will not arise." I had a rough specification handed to me, and I went down with my clerk. I afterwards wrote a letter to defendants embodying my report. I made a specification upon a second visit, when Mr. Shallow went with me, Sir Henry Leake being present. I tendered for the work. I applied to defendants for payment for making the estimate.

Cross-examined: I knew that defendants were house agents and surveyors. I was introduced to them for this work. I spoke to Sir Henry Leake upon my second visit upon the subject of the repairs.

Mr. Hance, upon looking over the estimate, said that both that and the specification had been addressed by the plaintiff to Sir Henry Leake. The learned counsel remarked that the plaintiff had agreed to pay defendants 80*l.* commission if he got the work.

Plaintiff said this was not so. This was the history of the commission question. Plaintiff wished to send in the estimate to defendants, but they said that he was not to do so, but was to include their commission in his estimate, and to send it direct to Sir Henry Leake, or they would

be only able to get their fees as surveyors. Defendants never said that plaintiff was not to be paid his expenses for making the estimate.

Mr. Hance then called Mr. Shallow, one of the defendants, who said that surveyors were not liable for such work as that now claimed for. Sir Henry Leake employed some one to do the work, and that person was a stranger to the witness.

Cross-examined: We should have been paid our commission by the plaintiff, and had no claim upon Sir Henry Leake.

Re-examined: We should have had no supervision of the work had plaintiff's tender been accepted.

Mr. Brooks said that he pointed out to the plaintiff that he most assuredly would not be able to charge Sir Henry Leake 10*l.* 10*s.* for making the estimate and 3*l.* 3*s.* for his daily expenses. Three or four builders had estimated the cost of the works, and, if each of them were to charge 10*l.* 10*s.*, it would cost the owner of the mansion a pretty sum.

Mr. Hance then contended that defendants were not liable, as they were only agents; but even as agents they had no authority to bind Sir Henry Leake.

Mr. Holl contended that the defendants had the greatest possible interest in employing a builder to go down and make an estimate, as they were to receive 10 per cent. commission if he obtained the contract.

The learned Secondary, in summing up to the jury, said that upon a certain letter there could be no doubt defendants were liable, and the question was, had plaintiff agreed to withdraw that letter. Plaintiff had to go into the country to do the work, and it appeared to be to the defendants' interest to get a builder to obtain the contract. On the other hand, defendants had urged that it would be most unreasonable to come upon them for the money. It was for the jury to say whether they thought that plaintiff had agreed to waive all claim against the defendants for the cost of making this estimate.

The jury, after a short deliberation, gave a verdict for the defendants.

Books Received.

The Modern Gymnast: being Practical Instructions on the Horizontal Bar, Vaulting Horse, &c. By CHARLES SPENCER. F. Warne & Co., Bedford-street, Covent Garden. 1866.

FOR those who cannot attend such a gymnasium as we have illustrated in our present number, here is a little book which will enable them on their own apparatus to get up the various exercises in the best manner. By means of 120 illustrations it sets forth *advanced* gymnastics in a very practical manner.

Miscellanea.

INDUSTRIAL EXHIBITION AT STOCKHOLM.—The Lords of the Committee of Council on Education have received a communication from her Majesty's Secretary of State for Foreign Affairs, announcing the opening of an Industrial Exhibition at Stockholm on the 15th of June next, showing the progress in art and industry in Sweden, Norway, Denmark, and Finland; and requesting that the proposed Exhibition may be announced in England.

"THE ROCKY MOUNTAINS."—In 1858, the United States' Government commissioned General Landor to survey this hitherto unvisited region, and discover, if possible, a route across the continent to California. Among the persons who were attached to the party was Mr. Albert Bierstadt, an American citizen, born in Dusseldorf, and where he afterwards studied, and enjoyed the advantage of the teaching of Leutze, Lessing, and others. Mr. Bierstadt has painted a remarkably fine landscape of a pass amidst the Rocky Mountains, and it is now on view at Mr. McLean's. It possesses several high qualities, including the quality of pleasing.

INSTITUTION OF ENGINEERS OF SCOTLAND.—The annual general meeting of this Institution was held at Glasgow on the 25th ult. The following medals awarded for papers read during sessions 1863-64 and 1864-65, were presented:—

The Marine Engineering Medal, to Mr. James R. Napier, for his paper "On the Incrustation of Marine Boilers." Session 1863-64.

The Railway Engineering Medal, to Mr. John Downie, for his paper "On Renewing the Substructures of Railway Bridges and Viaducts, without stopping the Traffic." Session 1863-64.

The Institution Medal, to Mr. James M. Gale, C.E., for his paper "On the Glasgow Water-works." Session 1863-64.

The Institution Medal, to Mr. Alex. C. Kirk, for his paper "On a Machine for producing Cold by the Expansion of Air." Session 1864-65.

The amount of subscriptions last year, from 132 members, associates and graduates, was 191*l.*; and of arrears from 79, 126*l.* The balance in favour of the Institution in the Union Bank was 356*l.*; besides which the Institution has railway shares to the value of 363*l.*; and a prize medal fund amounting to 366*l.*

NEW STREET AT PUTNEY.—The Conservative Land Society has planned, with other improvements in this salubrious neighbourhood, a new street, which is named, with the sanction of the Metropolitan Board of Works, "Disraeli Road." The design is being carried out by Mr. Eppy, architect; and Mr. Robert Greig is the builder.

THE IMPROVEMENT OF PARIS.—One of the most populous quarters of Paris, is that of Saint-Victor, in which 150 houses, containing more than 15,000 persons, are required for projected improvements. To settle the conflicting claims as to the indemnities to be given, two juries have been at work from the 9th April to the 7th inst. The demands made were 25,451,639fr., the offers of the city 9,359,920fr., and the allowances of the juries 13,905,700fr.

ETON RAQUET COURTS.—The Committee have arrived at a final decision as to the site for these courts. They will be erected back to back upon a narrow strip of land, which runs parallel with the Rev. Mr. Joynes's football field, adjoining the road leading to South Meadow, by the side of the Mathematical School. The committee will arrange the details. The cost of the courts will be about 1,500*l.*, of which nearly 500*l.* have been subscribed.

WIMBLEDON COMMON AND PUTNEY HEATH.—A report of the proceedings at a meeting of the inhabitants of Wimbledon, Wandsworth, Putney, and Roehampton, held on the 14th of March last, has been printed by Causton, of Eastcheap. At this meeting it was resolved to afford support to the Commons Preservation Society, especially with a view of preserving Wimbledon Common, and a committee of the neighbourhood was appointed for that purpose.

A "SILVER TESTIMONIAL."—Miss Isa Craig having yielded her position of Assistant-Secretary of the Social Science Association to practise social science in a new capacity,—to study practically, in fact, the Law of Marriage,—a number of the members subscribed and have presented to her a silver tea-service and salver as a wedding present. The inscription on the salver is: "To ISA CRAIG, from her grateful and attached friends of the National Social Science Association, 17th May, 1866."

THE NEW VEGETABLE.—At the Crystal Palace Flower Show on Saturday last, Mr. Bull exhibited his new "Indian Radish" (*Raphanus caudatus*), of which we have all heard so much lately. It is a straggling plant about 2 ft. high, with white cruciferous flowers, greatly resembling the common charlock of our corn-fields, the slender drooping pods—the only esculent portion—being in the largest specimens about 18 inches long, of a russet green colour; they are said to attain a length of 3 ft. or 4 ft., and to grow 6 inches in twenty-four hours. Though in full fruit, the plants were said to be very young, and to thrive well in the open country. The tropical part of the Palace was chosen for their display.

METROPOLITAN SANITARY ASSOCIATION.—The first meeting of a series projected in the several districts of the metropolis in connexion with the Metropolitan Sanitary Association, having in view the diffusion of information on sanitary topics, the practical discussion of matters bearing upon the public health, and the banding together of those who, as vestrymen and guardians, or otherwise, perform functions of public usefulness, was held on Tuesday night in the vestry-hall of St. George's-in-the-East, under the presidency of the rector of the parish. The subject specially announced for consideration was the "dwellings of the poor," and the room was well filled by persons of every rank in society who were interested in it and its cognate topics. A brief address by the chairman was followed by a lecture on air, water, ventilation, drainage, &c., by Dr. Lankester, F.R.S. The meeting was addressed in turn by Mr. Godwin, F.R.S.; Mr. J. T. Dexter; the Rev. G. H. M'Gill, M.A., incumbent of Christ Church; Mr. Hodgson Pratt, late chief commissioner of Education in Bengal; Mr. Benjamin Shaw, M.A.; Mr. W. H. Robinson, Dr. Hardwicke, and Mr. Martin Ware, jun., barrister, as well as by two working men in the body of the room. The character of the dwellings inhabited by large masses of the people, and the efficiency of several of the more prominent agencies in operation to provide new and improved residences for the working classes, were earnestly discussed, and several of the speakers were heartily applauded when dealing with those questions.

PEOPLE'S PARK, BOLTON, LANCASHIRE.—The new park and recreation-grounds will be opened with ceremony on Whit-Thursday. The Earl of Bradford will deliver an inaugural address.

MONUMENT TO KING LEOPOLD.—The Belgian Chamber of Representatives have unanimously voted the sum of 1,000,000 of francs, which is to be increased by public subscriptions, for the purpose of erecting a memorial to the late king. It is not yet decided what form the monument is to take.

A RECORD OF ANCIENT RYE.—A singular discovery has been made at Rye. While workmen were excavating for a drain near the Udimore crossing, in the suburbs of the town, they came upon the deck of a vessel, made of English oak, and of larger construction than is usual at that port in the present day. This appears to confirm the tradition that the town was at one period nearly surrounded by the sea.

NEW PARK AT HALIFAX.—Skircoat Moor is to be converted into a park and recreation-ground under the superintendence of the corporation. In the Halifax Improvement Act, 1865, the corporation has power to treat with Captain Savile for the manorial rights of the moor, about 55 acres; but the captain has handsomely given up his manorial claims under the circumstances, and in consequence the town-council have decided to so far honour Captain Savile, by calling the grounds the "Savile Park."

INTERNATIONAL HORTICULTURAL EXHIBITION. Anxious that the committee should be enabled to carry out this undertaking in a manner creditable to the country, we repeat the intimation that the show will take place on Tuesday next. The entries, we understand, are wonderfully numerous, and afford every prospect of an extraordinary display. The *conversazione* will be held on Wednesday evening, the previous evening being devoted to the banquet. At the Botanical Congress to be held on Wednesday morning, M. Candolle, whose reputation is European, will preside, and deliver a popular address.

THE DAMAGE DONE TO THE CLANMACNOISE REMAINS IN 1864.—This case has not yet been decided: indeed, the presumed malefactor has only now been committed for trial by the Parsonstown Petty Sessions, at the instance of the rector of the parish of Clanmacnoise. Meantime he has all along been at large, and bail was to be taken for his appearance for trial at the next assizes. His name is John Glennon, and he is said to hold a respectable position in King's county. He brings witnesses to prove that he did not do the damage to the interesting old ruins.

MARKET ACCOMMODATION FOR STALYBRIDGE.—From a report made by Mr. Amos Lee, the surveyor for Stalybridge, read at the quarterly meeting of the Town Council, it appears that the market for the town is to be on the plantation-ground between Church-street and Dean-street, in a line with the railings of Trinity Church. The front towards Melbourne-street will be 107 ft., and the whole area 1,593 square yards. The buildings will be of brick, with stone strings and mouldings. At the apex of the centre roof there will be a clock tower 64 ft. high from the market floor. There will be 28 shops in the interior. The bridge which will cross the river to the market will be designed to carry a rolling load of 40 tons, and it will be 51 ft. in length between the abutments. The estimated total cost is 8,969*l.* 4*s.* 8*d.*, of which 4,500*l.* is for the erection of the market, and 1,179*l.* for the bridge.

THE RESTORATION OF CHICHESTER CATHEDRAL A large and influential meeting has been held in the Town-hall, Brighton, to receive a report from the executive committee appointed to superintend the work of restoring the spire of Chichester Cathedral. The Earl of Chichester presided. The Duke of Richmond read the report, which stated that since February, 1865, when the last appeal for subscriptions was made in Brighton, the tower had been completed, and the spire itself was raised 60 feet. It was anticipated that before the next anniversary of the Queen's coronation the capstone of the whole would be elevated to its place. Only 5,000*l.* were now required to complete the work externally and internally. The meeting was afterwards addressed by the Bishops of Oxford and Chichester, the Dukes of Richmond and Devonshire, and others; and resolutions were passed adopting the report and pledging the meeting to renewed exertions.

LADIES' SANITARY ASSOCIATION.—This Association will hold a *conversatione* in the Hanover-square Rooms, on (this) Friday evening, May the 18th. Lord Ebury will preside, and Miss Clara Balfour will read the report.

A FLOATING DOCK FOR THE WEST INDIES.—It would seem that Lord Clarence Paget, when introducing the Navy Estimates, was more in earnest than was suspected at the time, in offering a passage to Bermuda to those who might feel inclined to trust themselves in an iron floating dock across the Atlantic, as the Lords of the Admiralty have concluded a contract with Messrs. Campbell, Johnson, & Co. for the construction of a dock, which is to be built in this country and then towed out to its destination.

NATIONAL GALLERY ENLARGEMENT BILL.—On the motion for the second reading of this bill, the Hon. Mr. Cowper, in reply to questions, said the judges would not make their award in respect to the competition for the design for the new buildings until the 15th of October. They had not yet been nominated. The Royal Academy had been told they must leave their present quarters. If there was an autumn sitting of the House the designs would be submitted to them. There was no truth in any report that the space at Burlington House had been contracted. The bill was then read a second time, and ordered to be referred to a select committee.

THE AMALGAMATED SOCIETY OF ENGINEERS, ETC.—The fifteenth annual report of this Society for the past year has been issued. The preliminary remarks of the general secretary, Mr. W. Allan, show that the Society is still making steady progress. The accumulated fund now amounts to 115,357*l.*, there having been added to it during the past year no less than 28,500*l.* Ten new branches, and 3,583 new members, have been added during the same period. One of the new branches is in Queensland, and another at Croix, in France. There are now 30,978 members. The expenditure for the year amounted to 49,172*l.*, of which 39,728*l.* were for the five chief benefits connected with the Institution, namely, donations to unemployed members, sick, superannuation, accident, and funeral expenses.

BRILLIANT MARBLED PAPERS.—In the factories where albumenized photographic paper is made a considerable quantity of paper is spoiled in the process, and it is then of but very little use. In Paris and Berlin this paper has always been washed as free as possible from the albumen, and then worked up into envelopes. Dr. Jacobson has found a new use for this paper; he proposes to stain it with aniline colours and to employ it for labels, covers of boxes, and general decorative purposes. By being splashed with concentrated alcoholic solutions of the various aniline colours, the waste of these coloured papers, according to the *Reader*, is now converted into marbled paper, of a much more beautiful appearance than what is produced by the old process, from the green-gold lustre which the films of these substances possess. The papers obtained by this method retain the gloss, the bright "satin" surface of the albumenized material, and are almost as brilliant by transmitted as by reflected light. They are said to be well adapted for shades, transparencies, paper lamps, and other means of decorative illumination.

ALARMING STATEMENT AS TO NITRO-GLYCERINE OR GLENOINE OIL.—Recent explosions have drawn attention to the dangerous character of this production. At the Mersey Dock Board lately, a communication was read from the town council on the subject, and it was stated that this oil is forwarded from Germany to Hamburg, thence to Hull, and thence by railway to Liverpool. A small quantity was sufficient to shatter a block of iron of 30 tons, and it might have caused the utmost destruction at Liverpool. Mr. Forward stated that the trade was so lucrative that the most fraudulent means were adopted in forwarding these oils. He personally knew an instance in which seventy cases of glenoine oil had been shipped at London, a sufficient quantity (had it exploded) to have shaken the metropolis to its centre, and destroyed an immense amount of property. It was suggested that in the bill now before Parliament, empowering the board to fine where goods of this kind are insufficiently described, a clause making such an act criminal should be inserted. The subject was ultimately referred to the Parliamentary committee.

TENDERS

For Branch Establishment for the London and County Bank at Woolwich. Messrs. Church & Rickwood, architects. Quantities supplied:—

Kirk	£4,994 0 0
Simpson	4,950 0 0
Tongue	4,850 0 0
Mann	4,545 0 0
Johnson	4,460 0 0
Lonergan	4,365 0 0
Hill & Sons (accepted)	4,285 0 0

For erecting in March Cemetery, Isle of Ely, two chapels, with tower and spire; also an entrance-lodge. Mr. G. W. Stephenson, architect:—

Brown	£1,550 0 0
Fast	1,465 0 0
Bennett	1,310 0 0
Pattinson	1,232 0 0
Bennett	1,230 0 0
Broadhurst (accepted)	1,217 0 0
For the Lodge.	
Fast	£319 0 0
Pattinson	310 0 0
Bennett (Lynn)	294 0 0
Bennett	280 0 0
Broadhurst (accepted)	246 0 0

For the erection of a villa at Ealing for Mr. Tyndale. Mr. J. B. Garling, architect. Quantities by Mr. T. Hill:—

King & Sons	£2,940 0 0
Piper & Wheeler	2,750 0 0
I'Anson	2,696 0 0
Mansfield	2,660 0 0
Nixon	2,640 0 0

For the erection of a warehouse, Bishop's-court, Old Bailey, for Messrs. Harris & Saunders. Mr. T. Aston, architect:—

Kent	£1,785 0 0
Brass	1,700 0 0
Bostel	1,689 0 0
King & Sons	1,575 0 0
Green	1,397 0 0
Browne & Robinson	1,339 0 0

For the erection of warehouse in Bury-street, for Mr. Simmons. Mr. N. S. Joseph, architect:—

Newman & Mann	£1,232 0 0
Browne & Robinson	1,180 0 0
King & Sons	1,175 0 0

For St. George's Church, Tufnell Park, Holloway. Mr. George Truefitt, architect. Quantities supplied by Mr. J. Warburton Stent:—

	Faced with Kentish Rag.	Faced with Malms.
Mansbridge	£5,200 0 0	£5,100 0 0
Myers	4,698 0 0	4,479 0 0
Sawyer	4,477 0 0	4,449 0 0
Dove, Brothers	4,255 0 0	4,240 0 0
Carter & Sons	3,960 0 0	3,860 0 0

These tenders are exclusive of the bricks which will be provided by the committee.

For schools for the parishes of Blakemere and Preston-on-Wye, Herefordshire. Mr. George Truefitt, architect:—

Prichard (accepted)	£482 0 0

Accepted for taking down and rebuilding Salem Chapel, Thirsk. The old fittings and material to be re-used. Mr. W. A. Brown, Architect:—

Bricklayer's, Mason's, and Plasterer's Work.	
Jackson	£230 0 0
Carpenter's Work.	
Wild	175 0 0
Slater's Work.	
Baynes	29 15 0
Plumber's Work.	
Best	37 10 0
Painter's Work.	
Pattison	15 15 0
Smith and Founder's Work.	
Nicholson	46 5 0

For a new Catholic Church in Thirsk. Mr. W. A. Browne, architect:—

Weatherly	£1,725 0 0
Fawcett	1,365 0 0
Wild	1,349 0 0
Wright & Son	1,312 0 0

Accepted for a residence at Ripon, for Mr. B. P. Ascough:—

Bricklayer's and Plasterer's Work.	
Orton	£314 0 0
Carpenter's Work.	
Johnson	261 17 0
Mason's Work.	
Barwick	46 18 6
Slater's Work.	
Kellet	44 10 0
Plumber's and Glazier's Work.	
Daniel	92 4 0
Painter's Work.	
Burton	18 0 0

For new shop front, cabinet bar-fittings, and alterations at the Lord Nelson Tavern, Manchester-road, Millwall, for Mr. R. Bradshaw. Messrs. Bird & Walters, architects. Quantities supplied:—

Sheffield	£1,267 0 0
Kilby	1,097 0 0
Henshaw	1,057 0 0
Brown	980 0 0
Ebbs & Sons	975 0 0

For proposed alterations and additions at Sussex House, Slough, Bucks. Mr. Wm. Sim, architect:—

	Design A.	Design B.
Snowball	£900 0 0	£978 0 0
Liddiard	899 0 0	999 13 4
Hards	799 10 0	850 18 0

For farm-house and outbuildings at Heath and Reach, Leighton Buzzard, for Mr. Charles Claridge. Mr. Frederick Gotto, architect:—

Chappell	£619 0 0
Edwards	622 0 0
Holdstock	572 0 0
Groom	547 10 0
Miles (accepted)	487 0 0

For St. Michael's Church, Hull. Mr. R. J. Withers, architect:—

Dove, Brothers	£9,400 0 0
Huddleston	9,150 0 0
Simpson & Malone	8,914 9 0

For a mansion at Hill Bark, near Birkenhead, Cheshire. Mr. Grayson, architect:—

Nicholson & Ayre	£14,666 0 0
Campbell	14,134 0 0
Dove, Brothers	13,350 0 0
Haigh & Co.	13,040 0 0
Burroughs & Son	12,543 0 0
Urmser	12,426 0 0

For a pair of residences, Wandsworth-lane, Upper Tooting, Surrey, for Mr. Herbert Taylor. Messrs. Wimble & Taylor, architects. Quantities supplied:—

Deacon	£3,455 0 0
Nixon	3,404 0 0
Thompson	3,270 0 0
Lathey, Brothers (accepted)	3,248 0 0
Kilby	3,115 0 0

For the erection of Jews' Synagogue, Walworth-road. Mr. H. H. Collins, architect:—

Myers & Sons	£5,974 0 0
Coles & Sons	5,940 0 0
Hart	5,797 0 0
Newman & Mann	5,728 0 0
King & Sons	5,654 0 0
Ennor	5,646 0 0
Jackson & Shaw	5,568 0 0
Williss	5,480 0 0
Chuter	5,125 0 0
Hill & Keddell	5,121 0 0

For decorative work at the new Synagogue, Great St. Helen's. Mr. N. S. Joseph, architect:—

Clark & Mannooch	£814 0 0
Newman & Mann	709 0 0
King & Sons	774 0 0
Heeps	684 0 0
Cohen (accepted)	680 0 0

For building a tavern and four shops in Blackwall-lane, East Greenwich, for Mr. J. Walters. Mr. H. J. Lanchester, architect:—

Cost of cellars built £300 0 0

	Tavern.	Shops.
Walker	£1,950 0 0	£980 0 0
Lester	1,930 0 0	—
Thompson	1,768 0 0	1,000 0 0
Searle	1,720 0 0	985 0 0

For St. Wilfred's new Girls' and Infants' Schools, Hulme, Manchester. Mr. Herbert E. Tijou, architect:—

Harrison & Shaw (accepted)	£1,110 0 0

For the erection of Lea House, Blockley, Manchester. Mr. Herbert E. Tijou, architect:—

Thompson (accepted)	£1,310 0 0

For building eight houses in the Lancaster-road, Notting-hill, for Mr. Sims. Mr. G. Stanham, architect. Quantities supplied:—

Broad, Brothers	£9,295 0 0
Newman & Mann	8,272 0 0
Cowland	7,990 0 0
Adamson and Son	7,938 0 0
Neale & Co.	7,900 0 0

For rebuilding Rye House, Peckham. Mr. J. Bramwell, architect. Quantities supplied:—

Nicholson	£2,310 0 0
Newman & Mann	2,235 0 0
Lathey, Brothers	2,168 0 0
Thompson	2,060 0 0
Wells	1,983 0 0
Marsland & Sons	1,932 0 0

For repairs and alterations to Riverdale House, Strand-on-the-Green, Chiswick, for Mr. L. R. Stewart. Messrs. Wimble & Taylor, architects:—

Colls & Son	£620 0 0
Adamson & Sons	608 0 0

For three pairs of residences to be built in the Lea Bridge-road for Mr. W. Bowden, at per pair. Mr. Thos. J. Hill, architect:—

Rivett	£1,883 0 0
Reed	1,875 0 0
Patman, Brothers	1,759 0 0
Gent	1,495 0 0

For five shops at Battersea for Mr. Edward Hember. Mr. H. McCalla, architect. Quantities supplied by Mr. Shrubsole:—

Myers & Sons	£3,373 0 0
Cass & Keast	2,912 0 0
Godbolt	2,686 0 0
Williams	2,653 0 0
Heath	2,600 0 0
Wilson	2,496 0 0
Poole	2,200 0 0
Minty & Son	1,973 0 0

For an assembly-room to be built on the Birkbeck Estate, Holloway, for Mr. Saint Maine. Mr. T. E. Knightley, architect. Quantities supplied by Mr. Shrubsole:—

Mayo	£1,458 0 0
Carter & Sons	1,389 0 0
Williams	1,388 0 0
Cressell	1,295 0 0
West	1,188 0 0
Godbolt	1,134 0 0
Terry	1,111 0 0

In list of tenders for lodge to Manor House, Frith, Kent, for Bloofield £366, read £366.